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Between the Andes and the ocean

William Eleroy Curtis

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BETWEEN THE ANDES AND THE OCEAN

AN ACCOUNT OF AN INTEREST-
ING JOURNEY DOWN THE WEST
COAST OF SOUTH AMERICA FROM
THE Isthmus of PANAMA TO
THE STRAITS OF MAGELLAN

BY

WILLIAM ELEROY CURTIS

"THE TREASURES OF THE EAST," "THE CAPITALS OF SPANISH
AMERICA," "VENEZUELA, THE LAND WHERE IT IS
ALWAYS SUMMER," ETC., ETC.



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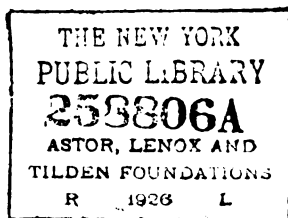
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TO
MY BELOVED DAUGHTER
ELSIE EVANS CURTIS

mes 2 June 1928

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Between the Andes and the Ocean

I

THE VOYAGE AND THE ISTHMUS

It takes from six to seven days to make the journey of 1,970 miles from New York to the isthmus. You might go from New Orleans in three days and from Tampa in two. The Illinois Central Railway and the Plant Company would put on lines of vessels to bring freight for their railway trains, but for the quarantine regulations, which make traffic during the summer months almost impossible, at least impracticable.

There is always more or less fever in the isthmus. It is difficult to keep it away, for Colon and Panama catch human driftwood from all over the American continent, and are the asylum for refugees from plagues as well as politics. When a man is run out of any of the west-coast countries or Central America for any reason he always strikes for Panama. It has a fine, large hotel, indifferently kept, but commodious, and a number of handsome residences that may be rented for short terms, like the houses in Washington and London for the season. If their walls could talk they might tell interesting tales of intrigue and conspiracy, for since the days when Pedrarias, governor of the first colony on the American continent, overthrew Balboa in a shameful manner, Panama has sheltered adventurers and conspirators.

If you will look at the map you will notice how readily the steamers might run down from New Orleans and Tampa, and it would be easy to establish a system of sanitary inspection that would prevent the transportation of disease germs among

the passengers and freight. Havana has always been much worse than Colon or Panama as a hotbed of yellow fever, and yet, under the vigilance of the marine hospital service, the Plant steamers have run back and forth every night for a number of years without ever having carried a case of contagion.

It would be a great thing for the Mississippi Valley to have a line of steamers from New Orleans to the isthmus. Most of the freight in the hold of the good ship *Finance* that brought us down originated west of the Allegheny mountains. It should have gone to its market on longitudinal lines.

The voyage from New York is delightful. People always expect a little weather off Cape Hatteras, but the captain of our ship said that was a popular delusion. He declared that Hatteras has no more storms than any other point on the earth's surface. The land projects into the Atlantic and makes nasty sailing along that coast in bad weather, and there have been terrible disasters from time to time; therefore, Captain Sukeforth says that Cape Hatteras has unjustly got a bad name. He has been sailing this course for a number of years—I have forgotten how many—and declares that he has never met with a gale in the latitude of Hatteras.

The severe weather of Hatteras is also due to the fact that it lies in the track of what are called the southwest storms; that is, storms that advance from the southwest and move northeastward. They are called northeasters on the Atlantic coast and are the severest of storms. Hatteras is in their direct path, just as Chicago is in the direct path of storms that advance from the west, and very near the path of all the storms that come down from the northwest. Taking the wind velocity for a month, Chicago exceeds Hatteras by about 3,000 miles.

The weather grows warmer day by day as you go southward on the sea as well as on the land, and you put on lighter clothing and rejoice that your stateroom is on the deck, where the trade winds, which a bountiful Providence provided to temper the heat of the tropics, can blow through the slats of your door and window blinds. The water is a dense indigo blue and very deep. You cross the deepest part of the

Atlantic Ocean. The days and nights are almost of equal length; the sunsets are as gorgeous as any you can see on the Mediterranean, and there is no twilight. The sun rises promptly and without premonition at the hour appointed in the almanac, and when he has finished his day's work he drops below the horizon just as a tired sailor tumbles into his bunk when his watch is over.

From New York the steamer takes a course due south until it "picks up" a light at Cape Maysi, at the tip end of Cuba, and then the course is turned a little to the southwest, passing east of Jamaica. The first land you see is Watling's Island, where Columbus stumbled upon a new world, and you are near enough to make out a tall lighthouse striped like a stick of candy, with the broad-eaved cottage of the keeper sitting on the rocks at its feet. There is a small settlement of white people and negroes on Watling's Island, which belongs to the British, a schoolhouse, a little chapel sustained by the Church of England and a magistrate who represents the sovereignty of Queen Victoria under the supervision of the governor of the Bahamas, whose headquarters are at Nassau, New Providence.

Investigations that were made at the time of the World's Fair settled the long controversy about the landfall of Columbus to the satisfaction of nearly all Geographers. Rudolph Cronau, a German scientist; Fred A. Ober, an American; and the superintendent of the lighthouse service in the Bahamas, a British naval officer, Captain E. Scobell Clapp, made thorough explorations with the logbook of Columbus as their guide. They visited all the other islands in the neighborhood, but none corresponded in any way with the descriptions given by the admiral, while Watling's seemed to fit it exactly—even the coral reefs and the lagoons that gave him so much difficulty.

The light that Columbus saw the night before the discovery was undoubtedly a torch in the hand of some faithful fisherwife held up to guide her husband home, and Albert Bierstadt spent several weeks at Watling's painting a picture to commemorate the Columbian anniversary and to give that worthy

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woman an appropriate place in history. The members of the board of lady managers from New York State adopted her and her torch as a design for their seal, and now I suppose she is one of us.

After leaving Watling's the steamer threads its way through the Bahama archipelago and gives the passengers a panorama of picturesque rocks, groves of cocoanut trees, groups of villages where the sponge fishers live and lonely lighthouses that guide the commerce on a course that is followed by many vessels. We pass very close to Navassa, a phosphate rock that rises out of the ocean in a conspicuous manner, and is celebrated in the history of the pirates of the Spanish main, who used it as a rendezvous and often marooned mutineers and prisoners there.

Until the annexation of the Hawaiian Islands Navassa was the only outlying piece of territory owned by the United States, and became our property many years ago by an act of congress which extended the sovereignty of Uncle Sam over any uninhabited island of the ocean which might be found valuable by Americans engaged in mining phosphates and other minerals. A couple of islands off the coast of Peru came within this category, and ownership was claimed by an American discoverer, but the Peruvian government objected and we gave them up, although the alleged owners remonstrated fiercely about it. A Baltimore company is digging phosphate on Navassa and hauling it up to fertilizer factories on the banks of the Chesapeake bay.

The steamers of the Atlas line, which ply between New York and the northern ports of Central and South America, always stop at Fortune Island in the Bahamas to take on a gang of roustabouts to handle their freight at Carthagena, Greytown and other places. The inhabitants of Fortune Island are chiefly negroes who escaped in early times from slavery in Cuba and other of the West India Islands. They are industrious, sober and frugal, and much better laborers than the natives on the main coast. They are paid fifty cents a day and "keep" by the steamships, which they consider good wages. On the voyage from New York

south the steamers slow up as they approach Fortune Island, and immediately a barge comes out from the shore, containing twenty-five or thirty robust black men who clamber over the decks and drop into their familiar places. On the return voyage they are landed in a similar way and have a couple of weeks of rest at home with their families.

The keeper of the lighthouse at Castle Island runs a sort of ocean postoffice. He receives messages, letters and newspapers from passing vessels for others that cruise about those waters. The Pacific Mailers going south from New York used to leave letters and bundles of newspapers for the north-bound ships of the same line. As most of the vessels run on schedule time, the lightkeeper knows when to expect them and puts out in a little boat when he sees them coming.

To look at from a distance—from the deck of a ship in the harbor—Colon is one of the prettiest towns on the coast, but when you get ashore it is a disappointment and a delusion. The houses are built of wood instead of stone, as in Panama, Carthagena and the cities of Mexico, and most of them are painted a dull lead color, which was adopted by the canal company as a sort of trademark, as the Santa Fe Company has taken yellow. Colon has burned several times. The town was entirely destroyed in 1885 and again in 1890, and many of the ruins have never been rebuilt or even cleared away. Some of the most conspicuous sites on the main streets are cellars filled with debris, weeds and stagnant water. For protection against future disasters the railway company established a "fire zone," that is, a wide strip of land between its property and the rest of the town, so that the flames cannot be so easily communicated. There are said to be 10,000 inhabitants, but they must be packed away very closely if the population is so large.

The harbor of Colon is a lovely sheet of water, about two miles across, and inclosed with beautiful hills whose bright green foliage never fades, and groups of palms here and there nod lazily to each other as they admire the reflections of their own beauty in the water. The palm is the peacock of trees. It is the most graceful thing that grows, and every movement

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of its plumage is on artistic lines, but you can't help feeling that it is vain and conceited and considers itself better than the bamboos and the ferns and other foliage you find in the tropics.

Colon is one of the few places in South America where steamers can go up to a dock. The Panama railroad, the Pacific Mail and other transportation companies have erected convenient and commodious warehouses of corrugated iron in which freight can be transferred from the hold of a steamer to a railway car with little trouble or effort. The packages are classified as they are taken on the dock. Roustabouts seize them as fast as they are raised from the hold and roll their trucks before a clerk, who glances at the addresses, checks them off, and then directs each to a car which bears the name of its destination. When the cars are full a little engine that reminds one of certain people comes snorting and fussing along with a tremendous idea of its importance and replaces the full cars with empty ones. There is a great deal of commerce. A dozen or more steamship lines converge there from all points of the northern hemisphere.

The harbor is dangerous because the entrance is toward the north, and the fierce gales they call "northers" come howling over the Caribbean sea two or three times in the winter season, about as frequently as blizzards in our own latitude. Then ships have to get out and steam around in the storm or go ashore, because if they remain moored to the docks they will be pounded to pieces, and there is not holding ground for anchors in the harbor against the tremendous seas and winds. Lying beside one of the piers is the rusty skeleton of a foolish ship that refused to heed the warning and remained at its dock, where it is now and ever will be an example to reckless mariners.

The railroad company occupies one end of the town with shops and boarding houses, and the canal company the other end, where there is a group of villas of the most ornate and elaborate "gingerbread" school of architecture, which were erected by Count de Lesseps for the comfort of his large and luxurious staff of managers and engineers. They were

elegantly fitted out and equipped with every possible convenience regardless of expense. There are clubs, billiard rooms, libraries and hospitals, and all the *et ceteras* of a colony of cultured gentlemen (except churches) which cost a million or two of dollars, and for years have been kept from destruction at an expenditure of \$30,000 a month. There are stables and fire-engine houses, warerooms for commissary stores, cook-shops and bakeries, and a low, cool-looking hotel for the accommodation of transient visitors. The railway company takes equally good care of its men. It asks a good deal of them to come down and work in this climate, and with commendable consideration makes them as contented as possible. The hospitals and clubrooms, hotels and boarding houses that have been provided for the railway hands are quite as comfortable as those erected by the canal company, but are not so ornate or elegant.

The French people call the canal colony *Christo Colombo*, the Spaniards call it *Christoval Colon* and the Americans have named it plain *Christopher Columbus*. The most beautiful, but at the same time the most inappropriate, statue to the discoverer that was ever erected stands on the point where two avenues of palm trees converge, and overlooks the entrance to the canal. It represents Columbus in the garb of a scholar, with a benign expression upon his countenance and his hand resting upon the tresses of a crouching Indian girl of exquisite face and figure. This beautiful bronze was erected by the ex-Empress Eugenie.

Under a cocoanut grove at the railroad end of Colon is another statue erected by the Panama Company in honor of William H. Aspinwall, John L. Stephens and Henry Chauncey, the three men to whose enterprise the world is indebted for rapid transit across the isthmus. Near the little station of Ahaca Lagarto, on the line of the road, is another monument to Mr. Stephens, who was equally famous as a historian, a diplomatist and an engineer. It is an enormous gramalota tree which overhangs the track, and has been allowed to remain as a memorial because under the shelter of its luxurious foliage Mr. Stephens died. He located the right of way and directed

the surveys, which were nearly finished when he was taken ill of fever and was carried from the swamps to the foot of this tree.

Near the Aspinwall monument is the American consulate, and just across the road is one of the few protestant churches in South America, which was erected by the railroad company for the benefit of its employés. It is a graceful piece of brownstone architecture.

One night at the church we witnessed a wedding ceremony, interesting and unique. What impressed us most was the intermingling of the black and white races on an equality. The clergyman was white, the bridal couple were white, the ushers were colored and a surpliced choir of colored children sung the wedding hymns, both a processional and recessional, and chanted the responses. The organist was a full-blooded negro and played very well. The little chaps who sat in the choir were the color of ebony, their voices were well trained and they understood their part of the ceremony.

There is a social distinction between the two races in Colon as everywhere, but in business, in religion and in education equality is recognized. The colored population comes from Jamaica, and other British colonies of the West Indies, and most of them are full-blood blacks. They mix and intermarry with the Chinese, who constitute a considerable and important portion of the population, and you frequently see colored women with almond-eyed babies in their arms; but mulattoes are very scarce. The colored women wear stiffly-starched calicoes and the men immaculate suits of white duck.

The vultures have charge of the health department. They are the official scavengers and garbage collectors and have a contract for cleaning the streets. There is a law to punish any person who shoots or otherwise disturbs them in the pursuit of their occupation.

If it were not for the vultures I do not know what Colon would be. There is no sewerage, and pools of filth abound in every block. Any town in any zone would be equally unhealthy, but the great discomfort is the humidity. The atmosphere is soaked with moisture. Everything drips. In

other countries during the wet season the rain falls regularly at certain hours of the day. You can expect a shower at Panama about 3 o'clock every afternoon during the rainy season and govern yourself accordingly. The rest of the day and the evening after 6 o'clock is delightful, and no one thinks of carrying an umbrella, but at Colon it rains all the time, and, according to the old proverb, it never rains but it pours; as if the bottom dropped out of the sky.

Colon and Panama are forty-seven miles apart. The rainfall at Panama is about 92 inches annually, or about 8 feet. The rainfall at Colon has been 250 inches, or about 21 feet, and the people get it all in five months, an average of four feet a month precipitation, while in Arizona they only have a few inches. It takes all the rest of the year for the people to get dry. The heat in the dry season is more severe, but not so uncomfortable. The thermometer ranges from 80 to 90 day and night. There is little moderation in the temperature after dark, but people easily adapt themselves to the conditions, and there is a certain fascination about the place that is difficult to comprehend. If you were to look the world over Colon would be the last place for any one to choose as a residence, yet many call it home and claim an attachment as strong as people feel for the villages in which they were born or where their babies are buried. They go away, but are glad to come back again, where they can find mildew on their boots and clothing in the morning and everything has a dank and musty smell.

The climate is not so unhealthy either, according to the opinions of the old settlers, who declare that whisky and imprudence cause most of the sickness, and that if tenderfeet would take ordinary care of themselves and observe simple sanitary precautions the cemetery at Monkey Hill would not be so large. Young men defy hygienic laws. They drink whisky, eat fruit at the wrong hours, sit around in damp clothing and expose themselves to dangers that would be fatal at home, and then, when their names appear in the list of the dead, their friends blame the climate.

There have been revolutions and riots and robberies in

times past, but there is no more orderly city of the same population in any part of the world. Neatly uniformed policemen patrol the streets, but have little to do, and the docket of the criminal court seldom has anything but petty larceny cases. The railroad hands control affairs, and the superintendent is a king. Sometimes they have found it necessary to take the law into their own hands and enforce it for the protection and benefit of the public.

There has been peace on the isthmus for a long time. The last serious revolution occurred in 1885, when a negro lawyer of Colon, by the name of Prestan, led a mob of roughs and roustabouts, who burned the town and maintained a reign of terror for several weeks. It was one of the most remarkable revolutions that ever occurred in America. It began in the domestic relations of Dr. Nunez, president of Colombia. He was for years the leader of the liberal party, and as its candidate was elected president, but wanted to share his honors with a brilliant and beautiful woman named Soledad, whose profile appears upon the coins of the country, and, in order to get a divorce, was compelled to make terms with the conservative party, which represented the church. He negotiated a concordat with the Vatican, turned over all the schools, colleges, libraries, hospitals and other public institutions to the priests and surrendered by a single act all that the liberal party had gained in forty years of fighting. It protested with force, the revolution became general and spread to the isthmus, where Prestan took advantage of the confusion and organized his mob. It is doubtful what he expected to gain, but the prevailing opinion is that he was after power as well as plunder, and intended, if possible, to make himself dictator on the isthmus. He was a negro of low origin, but obtained some education in Jamaica and had good natural abilities.

Prestan escaped in disguise, but was recaptured and brought back to Colon to answer the charge of burning that city. There was not the slightest doubt of his guilt, for a hundred witnesses heard him threaten in advance to punish the people for resisting him. But so great was the man's influence, so terrorized was the entire community whose homes and prop-

erty had been destroyed, that they feared to punish him, and the lot of hanging him fell to Captain Rountree, an old sailor of the Pacific Mail Co. Some people say that Rountree volunteered to perform the duty, but however that might be he did it without hesitation. He rigged what sailors call "a pair of shears" with telegraph poles over a flat car in Bolivar Street, Colon, and when the noose was around Prestan's neck helped the negroes shove the car from under his feet. Two of Prestan's lieutenants were executed at the same time. One of them was known as Cocabola, the name of a particularly tough kind of timber, which he is said to have resembled.

Prestan was not given "the benefit of the clergy" nor the three days' grace usually allowed condemned criminals down there. In all Spanish-American countries a man who is sentenced to die is given three days of life after the date upon which the sentence is ordered to be executed, for the same reason that similar consideration is offered those who have borrowed money, that he may have the advantage of any event that may occur in the meantime. Those three days are spent in a room called "en capilla," which means "the chapel." It is fitted up with an altar, a crucifix and other religious emblems. He is allowed the constant attendance of a priest, to receive visits from his friends and also to accept money, either solicited or voluntarily given, to be expended in masses for the repose of his soul.

There is a splendid field for enterprise on the isthmus as well as in the Central American countries, both in mercantile trade and agriculture. The pioneer spirit is no greater in the English and the Germans than in the Americans, and our energy is no less, but they have gone abroad and entered into mercantile engagements, while our boys have remained at home to subdue the prairie and search the secrets of the mountains. Nearly all the wholesale trading, the importing and exporting and the banking business in these countries is conducted by Germans, and very soon they will control the trade. They seem to adapt themselves to the climate better than other Europeans and to have a firmer hold upon the morals they bring with them from home. It is too often the

case that an American or an Englishman coming into a tropical country relieves himself from moral restraint, as he would never think of doing at home. This seldom can be said of the Germans. Travelers also notice that they have greater physical stamina too. They do not succumb so easily as the other races to the enervating influence of a climate. Down in these hot countries it is very easy to do nothing, and the most energetic men are often tempted to spend their time in the contemplation of a purpose instead of its execution. The German settlers cannot be accused of that fault. They never seem to lose their activity.

There is a prosperous California colony on the Chiriqui lagoon, about fifty miles from Colon, on the north shore of the isthmus. An American by the name of Thompson obtained a concession from the Colombian government about twenty years ago for a large tract of land, with the understanding that he would locate a colony there. He made a contract with the navy department at Washington for the establishment of a repair and coaling station and secured an appropriation of \$500,000 from congress to build dry docks, shops, wharves and quarters for officers and men. Several shiploads of coal were unloaded there, a survey was made and a town laid out, but somehow or another the scheme fell through. If I remember correctly, Secretary Hunt, who was the head of the navy in the Garfield administration, was opposed to the project and refused to spend the appropriation. Since then, however, a colony of several hundred people from California have taken up land and are said to be very prosperous. The location is the healthiest along the northern coast of the isthmus. The land rises rapidly from the coast as high as 2,000 feet, and the soil is well adapted for the cultivation of sugar, coffee, bananas, oranges and other fruits. In the higher altitudes the California people have planted large coffee groves, which are just beginning to bear. So prosperous have they become that a weekly steamer is now running between Chirigui and Colon to accommodate the traffic.

II

CONCERNING THE PANAMA CANAL

Abundant evidences of the extravagance and wastefulness of the De Lesseps Canal Company are seen on every hand between Colon and Panama; reminiscences of the golden days when a rain of French francs fell upon the isthmus; millions of dollars' worth of empty and useless structures and rusting machinery, and about eighteen miles of ditch half filled with debris. Not long ago some people who were digging a cellar for a house came across a locomotive buried in the sand under the surface. You hear many of that sort of stories. After the reorganization the officers of the new company went about quietly picking up machinery and other articles that can be preserved and made useful, and has been making an honest demonstration to retain the concession and furnish a foundation upon which to sell the franchise or raise the means to complete the work.

After the failure of the De Lessep's Panama Company, in February, 1889, the canal went into the hands of a receiver. A new company was organized in October, 1894, which appointed an engineer commission consisting of Gen. Abbott of the United States Army; Mr. Fulscher, the engineer director in charge of construction of the Kiel canal in Germany; Hr. Koch, an engineer commissioner engaged on the same enterprise; W. H. Hunter, chief engineer of construction on the Manchester canal; A. A. Fteley, chief engineer of the New York aqueduct commission, and several other able and experienced engineers from Europe and America, to make a thorough survey and recommend such modifications in the original plan of Count De Lesseps as they believed to be necessary to economy and success. The commission immediately reported for duty, spent several months upon the isthmus

and formulated a new plan, which has since been adopted and is now being carried out. It was possible to utilize most of the work that was done by the original company, although the greater part of the money which it spent was permanently wasted.

The original plan of Count de Lesseps was to build an ordinary sea level canal without locks, open from ocean to ocean, in the bed of the Chagres River—or, in other words, to extend the Chagres River, which empties into the Atlantic, through an artificial channel into the Pacific; but the new commission recommended that this plan be abandoned, owing to the excessive and expensive excavations through the mountains that would be necessary, and because of the difficulty and expense of taking care of the enormous floods that fall there during the rainy season. The Chagres River drains an immense watershed, and the rainfall is often so heavy that it rises ten or fifteen feet in an hour. The new plan recommended by the engineers contemplates a familiar, old-fashioned system of locks and dams to raise vessels in transit to a maximum elevation of sixty-eight feet above tidewater.

The three great problems to which I referred are:

1. The regulation of the water supply and the control of the floods in the rainy season.
2. The landslides which occur frequently during these rains.
3. The effect of the climate upon the health of the employés.

As represented by the new commission of engineers, these constitute the only serious problems to be considered; the remainder of the work is plain, ordinary engineering.

Under the new plans the total length of the canal will be forty-six miles, of which three miles is a channel dredged in the bottom of the Bay of Panama to deep water, leaving forty-three miles of inland construction. Of this fifteen miles on the Atlantic side, between Colon and the town of Bohio, and seven on the Pacific side, between Panama Bay and Miraflores, are on the sea level, and most of it was excavated by the De Lesseps Company, although the ditches are now prac-

tically useless, having been filled with debris and earth washed from the banks until they cannot accommodate boats drawing more than three feet of water. Nevertheless, this is an easy and comparatively inexpensive piece of work. The soil is clay and sand, and the great modern dredges, like those used on the Chicago Drainage Canal, could deepen it twenty-four or thirty-two feet in short order.

This leaves twenty-four miles of canal to be constructed with locks, and of that distance fourteen miles will be the Chagres River transformed into an artificial lake, covering 13,585 acres, or twenty-one square miles, between Bohio and Obispo on the Atlantic side of the watershed. This lake has been decided upon as the most simple and economical solution of the first problem stated. It will contain 53,000,000,000 cubic feet of water, will have a mean level of fifty-six feet above the sea and during the summer floods can be raised to a maximum of sixty-five feet above tide water without danger of overflow. It is intended to conduct into this lake by different channels all of the rainfall upon the Atlantic watershed drained by the Chagres River, and that, having received the floods, it shall retain them until they are needed during the dry season. Two locks will admit ships coming from the Atlantic into this lake.

The remaining ten miles of the canal, between the towns of Obispo and Miraflores, includes the summit, the continental divide, which is a hill called Culebra. This requires an enormous amount of excavation, and it is there that a gang of 2,000 or 3,000 Jamaica negroes has been at work for two years. The canal follows the Chagres River to Obispo, the southern terminus of the lake. The sea-level ditch on the Pacific side begins at Miraflores. The summit of the continental divide, the hog's back, is about 500 feet above tide water. This has already been reduced to about 300 feet. The engineer commission has two plans, one for a ditch ten miles long across this divide at a level of ninety-six feet, and the other at a level of sixty-eight feet. It is not a question of engineering, but of economy. It is estimated that if the ninety-six foot level is adopted the canal can be built or finished for \$87,000,000. If

the sixty-eight foot level is adopted it will cost considerably more, perhaps \$100,000,000. The present company has been engaged for four years making this excavation. The first surveys indicated that the mountain was solid rock, but experience has demonstrated that the work will cost less than was at first estimated, because it proves to be of a soft material, which can be worked with greater economy than was supposed. It is what they call an "indurated clay schist." It requires blasting, but is easily handled and gives no serious trouble. At the same time the bugbear of landslides is no longer feared.

From this height of sixty-eight or ninety-six feet the ships will be lowered into the Pacific by three sets of locks, and an additional tidal lock at the sea level at Miraflores, which offers of itself a considerable problem. The mean tide at Colon on the Caribbean Sea is only about eighteen inches. Curiously enough, at Panama, on the Pacific side, it varies from twenty-three feet, to twenty-eight, but that phenomenon offers no difficulties which the engineers cannot overcome.

This, in short, is the plan of the proposed Panama Canal. It will be a few miles shorter than that of Kiel and a few miles longer than that of Manchester and the drainage canal of Chicago. There will be double locks 738 feet long, 82 feet wide and 32 feet deep at the ends of all the levels. The maximum elevation of lift will be 32 feet, the average 30 feet. The locks will be founded upon rocks, built of the most perfect masonry, with single gates, revolving upon pivots, and the water will be supplied by pipes buried in the floors and delivered on each side throughout the whole length of the chambers.

There will be five dams upon the canal proper and a sixth to retain a storage reservoir for the purpose of furnishing water to the high level of the canal in dry weather. About half way over the isthmus the Chagres River turns an angle to the northward, having come tumbling down the mountains from a place called Alhajuela, which is elevated several hundred feet above the sea. Here it is proposed to construct a dam and create a storage reservoir to catch the drain from

a large watershed and retain it not only to feed the upper level, but also to provide power for an electric plant to run the locks, furnish light, etc.

The dam at Alhajuela will be of concrete masonry, founded on and abutting against natural compact rock. The length of the crest will be 936 feet, the height 134 feet above the bed of the river and 164 feet above the foundation. The dam that makes the other lake will be 1,286 feet long, 75 feet above the bed of the river and 93 feet above the foundations. It is confidently believed by the commission of eminent engineers which I have mentioned that these two dams will take care of all the water that can fall on the isthmus during the rainy season without injury to the canal. During their construction the river will be diverted through a tunnel and into a temporary course.

The commission had before it the records of floods for thirty years. That of 1879 is said to have been the greatest within the memory of man, when the discharge of water was 57,539 cubic feet a second at Gamboa and 109,410 cubic feet at Bohio. The duration was very short, being only forty-eight hours at Gamboa and ninety-six hours at Bohio. The reservoir capacity as proposed is said to be sufficient to receive and retain a flood twice as great as that described.

The original estimate of the cost of the canal by Count de Lesseps was \$214,000,000. To this he added \$26,000,000 interest on bonds for twelve years before earnings commenced, making a total of \$240,000,000. The receipts from the sale of stocks and bonds were \$260,000,000. The actual expenditures for all purposes on the Isthmus of Panama, according to the books of the company, were \$156,400,000. Of this \$88,600,000 was expended in the work of actual construction and \$67,800,000 represents the expenditures for property, the railroad, the piers, the erection of houses, shops, hospitals and other buildings, the purchase of machinery, the subsistence and the salaries of officers and men.

At the high tide of construction there were 15,000 employés of the canal company on the isthmus, who were not only paid big wages, but were sheltered and fed and furnished with all

luxuries, including wines, horses and carriages and the most elaborate outfits. The company even provided libraries, pianos and other musical instruments, billiard tables, solid silver table service, liveried footmen and valets for its employés. A house was built there for the use of Count de Lesseps and a similar one for his son, at a cost, it is said, of \$250,000, although they could be replaced for \$10,000 each. Along the shore of the bay, on Christopher Columbus point, as they call it, is a sea wall, composed of blocks of concrete, placed there to protect the lawn that surrounds the villa that the president of the canal company was expected to occupy when he came to the isthmus. Some say that those blocks of concrete cost \$75 each; some say they cost \$250 each, and there are thousands of them.

The greatest number of the houses, hospitals, machine shops and other property of the original company still remain, although they are in a state of partial decay. Everything made of wood rots quickly in this terrible climate, but the present company is keeping things in good repair and preserving everything possible. In addition to what I have described there is a well-equipped railroad forty-seven miles long, a fleet of three steamers, tugs, lighters, warehouses, machine shops, piers, terminal facilities and so on, which, in the last report of the company, are valued at \$11,806,579. Including this and the eighteen miles of ditch dug by the old company, now half filled with debris, and the work of excavation that has been done on the continental divide, the franchise from the government of Colombia, and everything else that belongs to the company, the assets of the enterprise are valued at \$90,000,000. It is estimated by the engineer commissioners that it will cost \$87,000,000 to complete the canal. And they figure that they will need \$15,000,000 for interest and unforeseen expenses, which makes the total \$192,000,000.

The franchise runs until 1904, when the canal must be completed, and from that date for ninety-nine years. The company has a strip of land 650 feet wide on each side of the canal and a grant of 1,235,500 acres wherever it may be selected in the State of Panama. It is exempt from taxation

and all merchandise imported for its use is exempt from customs dues. The Colombian government is to receive 5 per cent of the gross earning for the first twenty-five years, 6 per cent for the second twenty-five years, 7 per cent for the third twenty-five and 8 per cent for the remainder of the concession.

Under its treaty with Colombia the government of the United States is under obligations to preserve peace upon the right of way and guarantees free transit upon the canal.

The new company left the ditches as it found them and has been working in the interior on the most difficult and expensive part of the survey, carrying excavations through the summit of the continental divide, which reaches a level of about 500 feet. It is the lowest point on the backbone of America from Bering Straits to Tierra del Fuego and it seems as if nature intended to break the continent here. It is an extraordinary fact that Columbus in his dreams conceived that a navigable passage existed, or ought to exist, at this spot, and cruised up and down the coast with his feverish eyes scanning inlet and creek and bay in search for it. His instinct or his intuition, if you prefer that word, told him that it must be here, and it is the spot where the land is the narrowest and the lowest in all America.

The cost of excavation is estimated as follows:

Atlantic level	\$ 3,969,700
Bohio level	6,412,500
Summit level	22,904,300
Paraiso level	1,248,100
Pedro Miguel	922,700
Pacific level	5,864,700
Revetment of canal	1,351,000
Contingent expenses	4,053,000
<hr/>	
Total	\$46,706,000

The cost of five locks with which it is proposed to overcome the elevation of the isthmus in preference to digging the canal on the level of the sea is estimated upon a basis of \$9.65 per cubic meter for the masonry, material and labor included, as follows:

Twin locks at Bohio	\$6,217,700
Twin locks at Obispo	5,776,100
Twin locks at Paraiso	3,077,400
Twin locks at Pedro Miguel	5,568,300
Twin locks at Miraflores	3,049,200
Operating machinery	323,200
Contingent expenses	2,429,100
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Total cost of locks	\$26,416,100

The cost of the six dams and spillways is calculated on a basis of \$9.65 per cubic meter for masonry for five of them, and \$11.58 for the sixth, at the big reservoir at Alhajuela, which is intended to catch and regulate the rainfall of the mountains and feed the highest level of the canal in the dry season:

Dam and spillway at Bohio	\$2,119,300
Dam and spillway at Obispo	87,200
Dam and spillway at Paraiso	260,300
Dam and spillway at Pedro Miguel	173,100
Dam and spillway at Miraflores	9,700
Dam and spillway at Alhajuela	2,256,700
Contingent expenses	783,700
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Total cost dams and spillways	\$5,790,000

An allowance of \$3,008,000 is made for derivation and widening; \$2,702,000 for changing the location of the Panama railroad, which now lies directly on the right of way selected by the canal; \$312,100 for a railway track on the upper Chagres River, with \$73,900 for contingencies, making a total of \$3,088,888 for railway construction which must be charged to the canal.

For feeding channels \$3,281,000 is estimated; \$1,158,000 for the purchase of right of way; and \$2,509,000 for the cost of power plants, electrical apparatus, machinery, and engines. This makes \$92,081,100, the estimated expense of completing the canal, and the engineers have added \$6,755,000 for unforeseen contingencies, and make the total \$98,836,100, in addition to what has already been spent. The present value of the investment, including the franchise, all the property, rights

and privileges, is appraised at \$92,000,000, which raises the grand total to \$190,636,100 as the full cost of a completed canal with five locks across the isthmus. A sea-level canal without locks would cost about \$30,000,000 more, but the commission of engineers at present in charge has pronounced that impracticable, on account of the difficulty of controlling the rainfall and regulating the Chagres River.

The cost of the Nicaragua canal is estimated as follows by the engineers named:

Menocal	\$ 69,873,660
Ludlow commission	133,472,893
Walker and Haupt	118,113,000
Col. Hains	134,808,000
Chicago drainage contractors	115,000,000

These estimates are based upon the cost of 67 cents per cubic meter for ordinary earth and \$1.06 for rock, including the disposition of material. The workmen are negroes from Jamaica and other British colonies in the West Indies, who have been found to endure the climate better than any others, although they would be far from satisfactory as laborers to a Yankee contractor. They are paid \$1 a day in Columbian silver, which is worth about 40 cents in United States gold. All the hands are housed and fed in a comfortable manner, are furnished medical attendance and are treated like railway-construction gangs in the United States.

The canal people have tried every kind of labor—coolies from British Guiana and Trinidad, Chinese, Italians, negroes from the United States and a shipload of 800 black men was brought from Sierra Leone, Africa, but they did not thrive. The Africans were under contract for £2 sterling a month and everything found, and made no complaint of their treatment or their pay, but they would not work. They were not accustomed to such hard labor, nor to the food that was provided them, nor to the discipline. Instead of having an exclusively fruit and vegetable diet as at home they were given a good deal of meat, which affected them badly. The disease known as beri-beri became epidemic; many died, and after seven months the survivors were sent back to their homes. It is

singular that the experiment should have turned out in that way, because the climate on the isthmus is almost exactly like that of their native country. The negroes from Mississippi, Alabama and Louisiana played out after a few weeks in a similar manner, and had to be taken home. The coolies were useless to handle a pick and shovel. They seem to have no strength in their arms and backs. The Chinese were better, but the government stopped them coming. The Italians drifted to the towns and refused to work.

The sacrifice of human life by the De Lesseps Company was as reckless as the waste of money, although elaborate preparations were made to protect the health of the employés and to care for the sick. It will never be known how many died, but certainly a vast number, even more than while the railway was being built, and it is a popular saying that every tie represents a dead man. The present company, like the old one, has taken proper precaution for the protection of health, has established field hospitals for the care of those who are only slightly ill and erected a magnificent hospital at Panama for serious cases at a cost of 5,000,000 francs. It is in charge of competent physicians and sisters of charity, who were brought by the hundreds from France to minister to the sick. The chief disease is familiarly known as Chagres fever, and has afflicted tenderfeet upon the isthmus ever since the Spaniards first landed here. The doctors call it "pernicious fever," and say that it is caused by the malaria from the marshes.

Dr. Lacroisade, who has resided on the isthmus since 1887, and now has charge of the sanitary welfare of the 3,800 employés of the canal company, says that "during 1898 the Chagres fever did not cause a single death. Two diseases only belonging to the epidemic type appeared—the beri-beri, which was brought by the negro laborers from Africa, and disappeared when they were sent back, and yellow fever. The latter, after having been absent from the isthmus for at least six years reappeared in the summer of 1897, but was not really epidemic and occasioned only six deaths among the canal employés. From other infectious diseases, such as

smallpox, typhoid fever and diphtheria, the canal employés were practically exempt, and you may be assured that life on the isthmus is attended by no more danger from disease than elsewhere, even for natives of the United States and Europe, who, with the exception of the blacks and the negroes from the British Antilles, appear to resist the climate best. There would be no objection to this climate were it not for a constant feeling of fatigue and uneasiness, due to a temperature that is always high and an atmosphere that is always saturated with moisture."

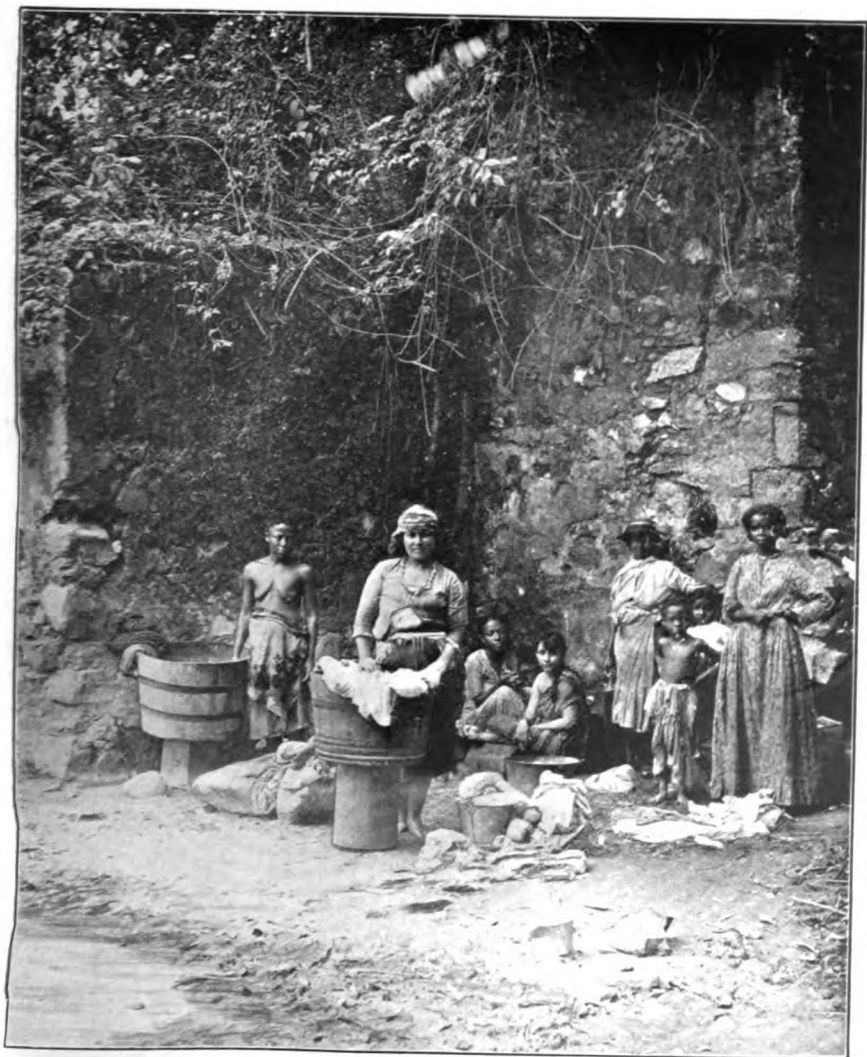
The advocates of the Panama canal lay great stress upon the fact that it has a good harbor at either end, capable of receiving the largest ships, while the Nicaragua canal has none, and the two that must be built present serious engineering difficulties; that a good railroad is now in operation along the entire route of the Panama canal, while one will have to be constructed in Nicaragua; that the supreme difficulties of the Panama route have already been developed and overcome, while those of the Nicaragua route are unknown; that nothing of an experimental character is proposed on the Panama canal, while several projects in the Nicaragua scheme involve elements of novelty that are without precedent; that the length of the Panama canal is only forty-six miles, while that of Nicaragua is four times as great; that there are no volcanoes on the isthmus, while there are several in Nicaragua; that earthquakes are practically unknown here, while in Nicaragua they are frequent; that the concession from the government of Colombia for the Panama canal is complete and satisfactory and there is only one nation to deal with, while two nations must be consulted in everything that involves the Nicaragua canal, and the concessions are complicated with conditions that are likely to prove embarrassing.

III

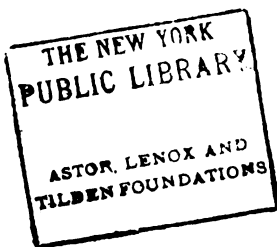
THE ANCIENT CITY OF PANAMA

Panama is one of the oldest and one of the quaintest towns in America. Santo Domingo city antedates it a few years, but none of the settlements which the Spaniards founded before it upon *tierra firma*, as they called the continent, have survived. The original city, known as Panama la Vieja, about four miles southward on the shore of the bay, was settled in 1519, gained a population of about 15,000 and prospered 162 years, when it was entirely destroyed by Morgan the buccaneer. According to the histories of the time he burned and blew up 7,000 houses, in which many people perished. It was done largely for revenge. The people had several weeks' warning of his approach—time enough to put all their money and valuables upon a ship and send it away, so that the pirates found nothing but merchandise to reward them for the tremendous task of crossing the jungles of the isthmus.

The present city dates back to 1673 and during all that time it has managed to maintain its individuality, notwithstanding attacks from the Gauls, the Teutons and the Saxons, and, although a large part of its population belongs to those races it remains pure Spanish to this day. In 1849 the North Americans began to come in, the argonauts and gold-seekers, for it became the principal station upon the main route to California. The mercantile element is largely German. There has been a considerable Italian immigration, and in 1879 a flood of Frenchmen came, and for ten years following everybody had money to burn. Then the bubble burst and after a hysterical period Panama settled down into its present somnolence, although much improved by the invasion. The best and biggest buildings, except the bishop's palace, belong



A Panama Laundry.



to the canal company. The governor has an imposing palace to live in and some of the rich merchants have erected handsome homes. The cathedral is a venerable and massive structure, and high mass on Sundays during the lively days of the canal was a religious pageant equal to any that can be seen in Paris. The bishop, the governor and the superintendent of the canal are the most conspicuous citizens, and Henry Schuber is the oldest inhabitant—the last survivor of a little colony of pioneers who settled there in 1849.

Many of the landmarks of old Panama remain—the palaces of the grandees, the walls and watch towers overlooking the water, and the crumbling fortifications which in the day of their erection were among the most formidable in the world and resisted many an onslaught from revolutionists and buccaneers. Here and there you find a vine-clad ruin, the remains of some building that has burned or decayed, and other structures which look so decrepit that you stand by awhile to see them fall. All the houses are built on the Spanish plan, around patios in which are fountains and flowering plants. The streets are narrow and paved with cobblestones, and in most of them the grass is growing in the crevices. Electric lights illuminate the principal streets and plazas, and a curious street-car line runs only after dark, going from the harbor to the railway station. No cars are running in the daytime. The explanation of this phenomenon is that the traffic is not sufficient to justify a separate power house, so the trolley cars get their electricity from the company that lights the streets and operates its dynamos only between dusk and dawn.

The harbor of Panama ranks with those of Rio de Janeiro, Sydney, San Francisco and Naples, and furnishes a beautiful panorama of irregular verdant hills, with huge green-clad mountains in the distance. It is fifty miles across the bay, and scattered here and there are odd-shaped islands and gaunt rocks that protrude from the water. Upon one of these islands Balboa fitted out his expedition for the conquest of Peru. It will be remembered that the material for the construction of four brigantines was cut on the Atlantic side and

transported across the isthmus by thirty negro slaves and a great number of Indians, who were impressed for the service. They toiled like ants over the mountains with their ponderous burdens under the scorching rays of the sun. Many perished because the task was too great for their strength. On the summit of the mountains a resting place was provided where the burden-bearers refreshed themselves and renewed their vigor. It is difficult to understand this chapter in history, for the southern side of the isthmus, and particularly the islands of the bay, abound in splendid timber, which might have been taken without difficulty, at least as easily as that on the northern coast.

It was on one of these islands, too, that Francisco Pizarro, Diego Almagro and Ferdinand de Luque organized an expedition a few years later which was more successful. De Luque was a priest and schoolmaster at Panama, and, unlike most men of his trade, was very rich. Pizarro was a swineherd in Spain, and, becoming tired of tending hogs, enlisted for a soldier and embarked with other troops for the first colony at Darien, where his boldness and natural ability soon made him a leader. Almagro was a foundling of similar characteristics and history but was not so cunning or so bold as Pizarro. In some manner or another these two adventurers persuaded De Luqué to put up the money to fit out an expedition for Peru, which Balboa had attempted some years before. They had received reports of its riches through the Indians from time to time, and were eager to make the attack.

Upon the same island where the Peruvian expedition was fitted out the Pacific Mail Steamship Company has repair shops and a shipyard, and just west of it is La Boca, the new terminus of the Panama railroad, where ships will soon be able to go up to the docks. On Flamenco Island there is a cemetery, with a big white marble monument marking the burial place of several officers and sailors of the United States man-of-war Jamestown, who died here of yellow fever shortly after the civil war. Another island, and the largest in the bay, called Taboga, is a summer resort where rich Panama people have country residences and spend a portion of the

year. It is reached by a little steamer that runs in and out every day. The bathing is good, the temperature is much lower than in the city, and large springs are said to furnish the best water in South America.

There are 100 other islands, large and small. Some are inhabited by fishermen and others shelter only birds of brilliant plumage, reptiles and other creeping things. The anchorage of the steamship companies is not far from the southern entrance to the Panama canal, where a channel thirty-two feet deep is to be dredged for four miles through the coral bottom of the bay. Here a fleet of old hulks lies at anchor, most of them being used for the storage of coal brought all the way from England, the United States and Australia in sailing vessels to supply merchant ships and men of war. The nearest coal mines are in Chile, but their product is soft and does not possess the steaming qualities of the British and American coal. Recent discoveries of anthracite in northern Peru may result in a solution of the fuel problem, but at present it is cheaper to bring coal from Cardiff or Baltimore in sailing ships around the Horn.

Some of the old hulks are mere skeletons. Time and thieves have treated them badly and torn the skin from their rusty ribs. Among them is the old Trujillo, an ancient paddle steamer that sailed up and down this coast fifty years ago, and the Ayacucho, the first propeller ever seen on the west coast of South America. She was considered a wonder of elegance and speed and still retains her lines of beauty.

At one time she was commanded by "Yankee" Hall, for many years commodore of the Pacific Steam Navigation Company, who was the original of the second mate on the Pilgrim in Richard Henry Dana's story, "Two Years Before the Mast." When last heard from he was still living at Jamaica Plains and drove about old friends who visited him from Panama in an ancient gig, with an anchor at the end of a strap, to fasten his horse.

"Yankee" Hall came down here some time in the 40's with a little side-wheeler called the Favorite, which he ran in competition with the Pacific Navigation Company, and gave them

so much trouble that they bought him out and placed him in command of their best ship. The present commodore of their fleet is Captain Hooker, his son-in-law.

The pioneer of steam navigation on the west coast of South America was William Wheelwright, an enterprising American who built the first railroad in the Argentine Republic and the first in Chile. The former connected Buenos Ayres with Rosario and the latter extended from Copiapo to Caldera.

Mr. Wheelwright conceived the plan of establishing a line of steamers on the coast and went to New York for capital. He failed to interest moneyed men in that city, but was more successful in London, where he organized the Pacific Steam Navigation Company, which ever since has been sending steamers with great profit between Liverpool and Panama. A monument has been erected in his honor at Santiago.

There is only one vessel showing the United States flag on the West Coast these days, and that is the Relay, a repair steamer of the cable company, a graceful craft painted white and well fitted for the climate and the duty it has to perform.

One of the islands in Panama bay used to belong to an enterprising old lady from Connecticut—the widow of a sea captain—and she lived all alone there in a little cabin for several years after her husband died. In the course of time—that is, about ten years ago—the Pacific Steam Navigation Company desired that particular island for warehouses and repair shops, and when it came to make the purchase the ancient Yankee dame drove a very hard bargain. She made it a condition of the sale that the company should give her a life pass upon its steamers between Panama and Valparaiso for herself and a maid, to be used at her pleasure. This was done without misgivings. The manager of the company thought it was only right to give the old lady a sea voyage now and then, but experience caused him to think differently, for as soon as she had conveyed the title to the property, and received a card signed by the president and general manager granting her passage at all times on their line, she calmly moved aboard their best steamer, selected a stateroom, and cruised up and down the coast for several months. At Guay-

aquil, Callao, Valparaiso and other of the large ports she would go ashore while the ship was loading and unloading, but she always left most of her traps in the stateroom and came aboard again before the sailing date. When she got tired of one steamer she would try another, and was not contented with getting her living free of cost, but attempted actually to make a profit out of the arrangement.

The old lady had never enjoyed the luxury of a maid in her life before she entered into this contract with the steamship company, but on several occasions brought a woman aboard whom she introduced as such, and demanded that she be allowed free passage. The company's officers discovered that she was collecting fare from these women—that is, scalping her pass—and declined to carry any more of them. The old lady made a terrible fuss about it, and threatened to sue the company for violating its agreement, but a lawyer she consulted advised her not to prosecute the case, and she reluctantly abandoned it. She continued to live aboard the Pacific steamers until her death.

With its ancient walls and fortifications, its tall buildings of gloomy gray and roofs of red tile, Panama has an oriental appearance as viewed from the harbor, and the shapely architecture of the twin spires of the cathedral adds much to the beauty of the scene. The fortifications are feeble and crumbling, but are picturesque. The sea walls which have resisted the incessant surf for more than two centuries, are covered with barnacles and moss. The cafés, which overlook the water, seem cool and comfortable from the bay, but are filled with an all-pervading smell which the nostrils of a newcomer resent, but the acclimated foreigners and natives have long ago ceased to perceive.

At present the passengers and freight that come and go must be carried in lighters between the steamers, three miles out, and a long landing pier, which extends into the bay from the Panama railroad station, but when the government permits the Company to use the new port, La Boca, at the mouth of the canal, all this trouble will be avoided. The tide averages twenty-five feet, but diminishes as you go up and down the

coast. At the Bay of Fundy the tide rises seventy-one feet, but there are few other places where it is so great as at Panama.

A considerable part of the expense of transporting freight to and from the west coast of Central and South America is due to the difficulty of loading and unloading here. The packages are taken from the cars to a long pier, hoisted into large iron lighters, towed out to the steamers, and hoisted into the holds of the ships. This is, however, a great improvement over the arrangements that formerly existed, when most of the freight was transported back and forth in sailboats and wooden launches.

The harbor fleet of the railroad company for several years was in command of an old-fashioned "shellback" sailor from the State of Maine, by the name of Rountree. He was a man without nerves, conscience or sense of fear, and had no respect for anything but force. Had he lived 100 years before his time he would have been a famous pirate, and was altogether an odd and interesting character, of whose eccentricities many stories are told.

Rountree used to knock the negro roustabouts around without mercy, and killed one too many,—a colored man prominent in the church and several secret societies, whose friends followed up the case and obtained a warrant for the captain's arrest. The latter had never been arrested and swore he never would be, so he got out the hose on his tug, and when the police came down with a posse he turned on the hot water and scalded them. They fled in a panic. Expecting them to come back with re-enforcements, the captain cast off his lines and steamed out into the harbor, where he dropped anchor, and remained for a week or more, while the governor and military authorities remonstrated with the railway men. Finally Colonel Burt, the superintendent, agreed to persuade Rountree to surrender, with the understanding that he should be banished and not imprisoned. So the captain came ashore and took the next steamer north. He went to Nicaragua, where he worked for the canal company a year or two, and then drifted back to the isthmus. He could not stay away.

When the friends of the murdered negro learned of his arrival they appealed to the authorities, and, having violated his parole, Rountree was arrested, thrown into prison, and a few days later was made boss of the chain gang that cleans the streets. Panama was a clean city as long as he was in charge. He was allowed to come and go without interference, and only went to the jail when he couldn't get a bed or a meal elsewhere. Most of his time was spent sitting around the barroom and balconies of the Grand Central hotel.

By and by, as the time for his trial approached, the authorities tried to get rid of their troublesome prisoner. He was an American citizen, and the murdered man was a British subject from Jamaica, which threatened international complications, and it was decided that Rountree must escape. At first he refused to do so, but finally consented, and then, to the horror of the authorities, insisted upon going around and bidding everybody good-by. He loafed around the Washington hotel at Colon for a week or two before he sailed, and when he did go every foreigner in Colon was on the dock to see him off. As soon as the ship was out of sight the governor issued a proclamation declaring him a fugitive from justice and offering a reward of 250 pesos for his capture, dead or alive. He took great risks thereby, because if old Rountree had ever seen the poster he would have come back to the isthmus to claim the reward. He got a job at the Brooklyn navy yard and died there several years ago.

Howard Paterson, of the school of navigation in New York, has immortalized this eccentric sailor in a story called "The Captain of the Rajah."

The weather is not so hot in Panama as it often is at Washington, and sometimes in New York and Chicago. At noon the thermometer showed 82 degrees on the balcony of the Grand Central hotel, in Panama, and at bedtime that night it stood at 78. The houses are built for hot weather, so that the same degree of heat is not so severely felt in this latitude. The rooms have high ceilings, wide windows and thick shutters to keep out the sun. There is no glass in the windows. I doubt if there is a pane of glass in Panama. The floors are

of tiles, uncarpeted, with rugs here and there. On the shady side of the street you don't notice the heat and on the sunny side you carry an umbrella.

It would be quite comfortable in Panama if it were not for the yellow fever and if people would stop telling stories that make you miserable. They have a habit in all of these countries of entertaining visitors with the experience of tenderfeet who have suffered horrors. It is the same way in the mines and on the ranches in the western states. Out there they call it "stampeding." There is no particular name for the nuisance in this country, and those who tell you these wretched yarns intend to be friendly and do you a favor, but many a nervous person has been frightened into the fever by listening to the narrations of those who have survived epidemics. The chief officer of the steamer which brought us to Colon, is a first-class "stampeder." He has a large fund of yellow-fever stories; has been sailing in the tropics for twenty years; has made a special study of the disease and knows all about it; has had hundreds of friends die horrible deaths, and most of them have caught it at long range—"A hundred and fifty yards to the le'ward" is just about right. He never knew a friend of his to miss a microbe, and declares that carriage drives about a city are particularly conducive to germ gathering. Or, if you want a dead-sure thing on the yellow fever, it is only necessary to go to the plaza and sit awhile under the shade of the palm trees. That diversion, he says, is particularly fatal to Americans.

I suppose well men and women have taken yellow fever, but very few of them. When a man is in good condition physically, and takes care of himself, is careful in eating and drinking, and avoids exposure to dampness and the sun, it takes a good many microbes to throw him down, and most of the victims to climatic diseases are punished for their own imprudence.

The bay at Panama used to be a great place for sharks, but we lay four days at anchor off Taboga, while the steamer Palena of the Chilean line was being loaded and unloaded, and didn't see but one. He was "a little chap," and the purser

Group of Natives, Panama.





caught him with a big iron hook that the engineer made. It was baited with salt pork, and the shark snapped it greedily, but he was a young fellow and didn't know any better, and measured only nine feet long.

"Taboga Ben," who had been the terror of these waters for fifty years, and was personally known to every skipper that sails this coast, is dead. Captain Leadbetter, who tows freight barges with the little steamer Bolivar, got a harpoon into his spine about a year ago. "Ben" struck out at a tremendous pace when the iron pierced his vertebræ, and must have suffered intense agony, for he left a stream of blood upon the surface of the water. Leadbetter rung the engine bell and ordered on all steam in pursuit, so that the cable shouldn't part. The little Bolivar never went through the water so fast as she did that day. She chased "Taboga Ben" all over the harbor of Panama. Finally, exhausted by pain and the loss of blood, and weakened by the torrent of bullets that were plugged into his head whenever he raised it to the surface, "Ben" gave up the struggle, rolled over, and died.

He was such a famous character, and the public was so much excited by the affair, that Leadbetter towed him to the Panama railroad pier, hoisted him out of the water, and laid him out on two platform cars. He weighed 7,000 pounds and measured forty-six feet from the nub of his nose to the tip of his tail.

For several days the monster was on exhibition near the railway station, and everybody in town had a good look at him. Then, as he began to show signs of maturity, they hauled him up into the country and dumped him into a ditch, which proved to be a mistake, for during the next three or four weeks people could smell him all over the isthmus. The residents of that region had to abandon their homes, and all the windows of the cars had to be tightly closed as the trains on the railroad passed the place.

There are several other celebrated sharks along the coast. "San Jose Joe," who haunted the coast of Guatemala, was as big as "Ben," and equally notorious. He, too, escaped conspiracies for his assassination for many years, but inadver-

tently took a dose of dynamite. An officer on one of the American men-of-war concealed a large piece of that powerful explosive in a slab of salt pork, sewed it up carefully and threw it overboard while the vessel lay at anchor off San Jose.

"Joe" had been hanging around for several days, picking up choice morsels that were discarded from the galley, and swallowed the pill. The explosion was terrific, and the horizon was obscured by a shower of shark meat for several seconds after "Joe" brought his jaws down on that pork.

The magnificent pearls that ornament the crown of Spain, and those that are so much admired by tourists who visit the cathedrals at Seville, and Toledo, were found in oyster shells in the bay of Panama, and the large strings and clusters which the Spaniards took from the Indians both on the north and west coasts of South America, came from the same source. Pearl fishing is still carried on to a considerable extent at Panama. In the spring of 1899 a boy 15 years old found an oyster that concealed a jewel that was offered for sale in Paris for \$10,000. He received \$4,000 for it from a negro speculator named Justiana. The latter took it to Panama and sold it to Felix Erhman, the banker, for a considerable advance on that price. At the Erhman banking house I saw an assortment of pearls valued all the way from \$50 to \$4,000, which are Panama prices, and considerably lower than those that would be asked for the same jewels in London, Paris or New York.

Pearl oysters are found in all parts of Panama bay. Two years ago an ordinary fisherman found one near Taboga island, not more than half a mile from the regular steamship anchorage, that contained a pearl worth \$2,400, but the richest beds are about thirty miles from the city. The oysters are much larger than those found in northern waters, and the shells are even larger still. The oysters are rank and coppery, but are healthful and are eaten by the natives. The smaller ones are often brought to the Panama market.

The Pearl Islands, as they are called, compose an archipelago of sixteen islands and several large rocks, with between thirty and forty little villages of negroes and mixed Indians,

a population of perhaps 1,000 all told, engaged in diving. The islands are low and heavily timbered, and the soil is fertile. The cocoanut groves and long stretches of white beach that glisten like silver in the sun make a pretty picture. Most of the islands belong to Panama capitalists, who cultivate the soil, as well as manage the fisheries. The largest, called Rey, which has about one-half the population, is fifteen miles long and seven broad. San Miguel—St. Michael—the chief town, and headquarters of the "pearlers," is a cluster of palm-thatched huts, several stores built of wood and corrugated iron, and a church of stone, larger and more costly than all the rest of the buildings of the town combined.

The population, mostly colored, are descended from the slaves that were originally employed by the Spaniards in pearl fishing. Since freedom came in 1824 the descendants of the old villagers have carried on the business under different regulations. The divers, like the gold miners, who were also slaves, were formerly kept in pens like the diamond diggers of Brazil and South Africa. Perhaps that was the reason why convicts and slaves only were used for this work. It must have been difficult to induce independent citizens, however humble, to submit to such treatment; but even then, with all the precautions that were exercised, the finest pearls were smuggled out from the island.

The pearl is an excrescence, a deformity, a mute protest of a helpless animal against an uncomfortable condition it cannot control or escape. It is created by the accidental or intentional intrusion of some foreign substance into the shell of the oyster or mussel, which irritates the animal and thus increases the flow of saliva or nacre, which crystallizes around the offensive article. The art of cultivating pearls has been known to scientists for many years, and has become a recognized industry in Wisconsin, in several parts of Europe, in China and Japan.

The shell is opened with a small instrument of mother of pearl, the mantel of the animal is gently lifted, and a particle of sand, a pebble, or other foreign matter is placed carefully beneath it. The mollusks are then deposited in the water at

a depth of from two to five feet, where they are fed with certain vegetation, which is supposed to increase the secretions.

The French bore a hole through the shell of the oyster or the mollusk and insert a particle of glass, around which the saliva will adhere.

The only pearls found in the Atlantic ocean are on the north coast of South America, near Baranquilla, Colombia, and the Marguerita Islands, off the coast of Venezuela, which were discovered by Columbus, but their pearls are of a poor quality. Pearls are found almost everywhere in the Pacific, on the coast of Mexico and Central America, as far south as Guayaquil, in the Hawaiian, Samoan, Caroline, Ladrone and Polynesian Islands, on the coast of Australia, and the finest come from the Indian Ocean, near Ceylon. The abundance and the quality of the pearls produced depends upon the character of the water in which the mollusk lives and the food it consumes.

In the bay of Panama the pearl divers who work with diving bells are required to pay a license fee of \$350 a year and are allowed to work wherever and as long as they like. Each diver usually goes down twice a day, and remains under the water from half to three-quarters of an hour each time. He tears the oysters off the rocks and puts them in a wire basket which is hauled up by a windlass to the deck of the schooner where they are opened under the surveillance of inspectors. Each basket will contain forty or fifty oysters, and is usually filled five or six times while the diver is down. These divers are furnished licenses, diving bells, and other apparatus by the pearl merchants of Panama and are paid regular wages, but almost every negro on the island in the Bay of Panama is a pearl fisher on his own hook, and whenever he cares to do so he dives naked at low tide and brings up two or three oysters in his hands. This is difficult work, for the oysters are fastened to the rocks and it takes a good deal of strength to wrench them off.

Pearl diving is a great gamble. A negro diver may often go down a hundred times without getting a single pearl, and his only reward is the shell, which is worth from thirteen to

fourteen cents a pound. Mr. Piza, the largest dealer in Panama, told me that his boat took 100 tons of shell one season without finding a single pearl, and then daily for four or five days in succession secured two or three of the finest pearls he had ever seen.

The pearl fisheries in the Bay of Panama pay about \$500,000 in pearls and \$250,000 in shells per year. The shells are sent to New York, Paris and Antwerp, where they are used for making buttons, knife handles, ornaments and for all sorts of purposes. The pearls go to Paris, where they are distributed to other markets. Very few are sent to New York or to other ports of the United States because of the high duty. There is, however, more or less smuggling, as a pearl can be concealed from a custom house officer about as easily as any merchandise that can be imported.

Pearls are increasing in value for two reasons—the growing scarcity and the growing demand. Forty people can afford to buy pearls to-day where one was able to do so twenty years ago. A fine pearl commands any price the owner may ask for it, although pearls are not considered a safe, permanent investment, like diamonds, because they are perishable and decay with time. None of the celebrated pearls of to-day are old, and heirlooms that have been kept for several generations gradually lose their luster and their value.

The most beautiful pearl in existence is in the crown of one of the former Czars of Russia and is on exhibition in the Kremlin at Moscow. It is a perfect sphere, and so pure as to appear almost transparent. It weighs ninety grains. The next finest in the world is known as the Hope pearl and is owned by an English nobleman. There is a remarkable pearl in the crown of an image of the Virgin at Saragossa, Spain, and another of equal value in a cross in the cathedral at Seville, which is said to have been brought from America by one of the early conquistadores.

A few years ago an American traveler purchased for 100 marks an antique gold brooch that he found in a bric-a-brac shop in a small town in the interior of Germany. In the center of the setting was a spherical jewel that was supposed

to be hematite, a species of iron ore, but when the brooch was brought to the United States and sent to Tiffany's to be cleaned the piece of iron turned out to be one of the most beautiful gems ever exposed to view. It was a black pearl valued at \$12,000. An attempt was made to trace the ownership of the brooch, but it could only be learned that the pawnbroker had received it from a stranger some years before as security for a small loan and that the owner apparently had no knowledge of its value.

The romantic story of Cleopatra's pearls dissolved in wine was invented by one who was not familiar with their composition. Pearls cannot be dissolved in wine or vinegar, but they can be eaten by certain powerful acids, which would have burned the beautiful throat of Cleopatra so that she would have died instantly.

The enormous amount of gold found among the Indians by the conquistadores, the rich product of the mines in the Spanish colonial period, the successful raids of the pirates and the buccaneers that used to haunt these coasts, have naturally given rise to many tales of buried treasures, and one of them involves the Cocos Island, a small "spot" of ground belonging to Costa Rica, in latitude 5 degrees and 32 minutes and longitude 87 degrees and 2 minutes, about 400 miles southwest of Panama.

The story goes that in 1821, during the revolution which separated the colonies from Spain, the wealthy Spaniards of Central America, fearing that their houses would be looted and their savings seized by the natives in rebellion, loaded a schooner with gold and gems and silver plate and sent it, in charge of a committee, to Cocos Island, to be buried until the troubles were over. Each of the committee of six men had a chart of its location. One was killed during the revolution. Two died from natural causes before it was over. When peace was restored the other three started for Cocos to bring back the wealth, but were never heard from again. Their boat is supposed to have been driven on the rocks of the island and all on board perished. This was about 1830.

No further attempt was made for several years to obtain

the treasure, but then the heirs of the dead and the other owners of the property began to stir things up and organize expeditions for its recovery. Several parties went over with gangs of men to do the digging, but never brought anything home. Alleged copies of the chart were made and sold to speculators after the secret had become generally known, and through the hands of sailors found their way to all parts of the world. Clandestine syndicates of treasure-hunters were formed and expeditions were sent secretly from New York, San Francisco and London, as well as from Panama and Central America. There has been a good deal of fighting and a good deal of fever, for, although the island is an attractive place, it is as unhealthy as the Garden of Hesperides. The Angel of Death seems to guard the buried treasure of Cocos Island as the dragon guarded the golden apples there.

Cocos arises abruptly from the sea, with broken walls of rock that are almost perpendicular. There is occasionally a ravine, down which a stream of water rushes, or a strip of sandy beach, against which the surf breaks with great violence. The entire surface is covered with luxuriant vegetation, great spreading trees, strange plants and vines and beautiful foliage, which furnish a remarkable field for botanical research. There are many large streams also, and several small lakes, 300 or 400 yards across, deep reservoirs of pure, cold water bubbling up from the center of the earth. It is said to be the finest water in the Pacific.

According to these tales, Cocos Island must be an ideal place for a Robinson Crusoe. It has abundant fish and water fowls, turtles are plentiful and crabs of prodigious size, and the woods are full of wild pigs and goats that were abandoned by the early inhabitants and have multiplied. The great objection is the moisture. The island lies in what the sailors call the doldrums, a strip of sea a few degrees north of the equator, between the east and the west trade winds. In that region there is seldom any breeze, and sailing vessels always avoid it for fear of getting becalmed. The rainy season extends the year around, and the precipitation is so large as to be almost incredible.

In 1898, the *Imperieuse*, flagship of the British squadron of the north Pacific, with Rear-Admiral Palliser in command, came all the way from Vancouver to Cocos, under orders from London to investigate the claims of one Charles Hartford, an Englishman who had a concession from the government of Costa Rica to search for the treasure on commission, and had interested a capitalist by the name of E. A. Harris to become his "angel" and furnish him with funds. At the time of this visit the only inhabitants of Cocos were a German family named Gerster, the remnants of a colony of Germans who had come from Costa Rica, but abandoned the place after a few months' residence because of the unhealthy climate. They did considerable prospecting and found traces of lead and quicksilver, but no gold or treasure.

Two or three hundred sailors from the *Imperieuse* were sent ashore with picks and spades, and dug trenches in parallel lines six feet apart and ten feet deep at the place indicated by a chart which Hartford brought with him, but they found nothing. He showed them also a tunnel or cavern in the rocks, which they blew up with dynamite, without a sign of the \$30,000,000 of silver plate and jewels and gold. It rained torrents all the time, and digging was not only difficult, but dangerous, as there were several landslides. Hartford was left at San Jose de Guatemala, where he endeavored to persuade the captain of the United States steamer *Alert* to go down and continue the work, but the *Imperieuse* returned to Vancouver with nothing but a story.

Hartford found his way to Panama and remained there for several weeks. He loafed around the American consulate, lamenting his bad luck and telling people what he intended to do with the treasure if he ever found it. Stories of buried gold among the ruins of old Panama, which was destroyed by Morgan, the English pirate, 200 years ago, excited Hartford, and, hiring a negro laborer, he spent several weeks examining the crumbling walls and slimy cellars of the ancient city. He returned to Panama for another short period in May, 1899, and then went with his negro assistant into the mountains of the Isthmus of Darien in pursuit of another "will o' the wisp."

During the latter part of August the negro returned to Panama alone and told inquirers that Hartford had died of fever in the mountains, but no one took enough interest in the subject to report the matter to the consul-general. Suspicion was excited because of contradictory statements made by the negro, and some of the American residents decided to make an investigation, but the negro suddenly disappeared and has not been heard from since.

Hartford came originally from Connecticut, but said very little about himself and never received any letters, so that his mysterious disappearance could only be communicated to the state department as a matter of record for the interest of whom it may concern.

IV

CRUISING ALONG THE WEST COAST

The voyage from Panama down the west coast of South America—or rather, up the west coast, as the sailors say, just as we say “down in Maine,” in defiance of geography—is one of the most charming that salt water affords. You’re always sure of fine weather, fine ships and a smooth sea. It never rains, it never blows, and the swell is not heavy enough to make ordinary people seasick. From the morning after leaving Panama until Valparaiso is reached the ships follow the shore, and the passengers are often in sight of the Andes, whose feet are buried in dense verdure, whose breasts are wrapped in foamy clouds and whose peaks are crowned with spotless snow, which sparkles forever and ever under the tropic sun. The spectacle of Chimborazo, rising like a king among an army of Titans, is unsurpassed by any mountain view on earth, unless it be the peak of Teneriff, approached from the westward. Chimborazo has nearly twice the altitude—more than 22,000 feet—and until Mount Everest in the Himilayas was measured, was mentioned in the geographies as the highest peak on the globe; but it is eighty miles from the sea, and can only be seen in very clear weather, while the peak of Teneriff springs directly from the ocean and therefore seems more massive and magnificent.

The weather on the south Pacific is always fair, and the heat is tempered by three causes—the antarctic current, the trade winds from the ocean, and, when they are lacking, by breezes from the eastward, which are cooled to freshness as they pass over the mountain snows. From Guayaquil southward to Coquimbo, including the entire coast of Peru and the north half of Chile, a distance of about 2,200 miles, is a rainless region, which is called the Zone Seca by the Spaniards,

or "Dry Zone." The trade winds blowing from the east leave in the Andes all the moisture they have brought from the Atlantic ocean, and when they reach the dry desert plain the air is so rarified that they produce a partial vacuum, which is filled by a constant stream of air from the ocean, which, of course, is much cooler than the plain. This influence extends 100 miles off the shore, and thus there is always a cool breeze blowing from one direction or the other, either over the cold waters of the antarctic current or the snows of the Cordilleras.

The temperature was much cooler after we left Panama than it was at any time between New York and Colon. On the Caribbean Sea the trade winds followed the ship and we got no benefit from them. The air was warm and sultry and the nights particularly uncomfortable, although we had deck staterooms with a door and two windows open and a transom in the roof. The thermometer on shipboard never fell below 84 degrees after passing Watling's Island, which is in 23 degrees, 56 minutes, 40 seconds north latitude, about the same as Havana.

We crossed the equator at 6:15 p. m., Sunday, July 2. The thermometer stood at 76 degrees in the chartroom on the shady side of the ship and at 78 degrees in the companionway leading to the dining saloon. A fresh breeze was blowing from the southwest, the swell was a little heavier than usual, and a few white caps ornamented the surface of the ocean. After dinner that evening it was so cool that we pulled our chairs to the leeward of the cabin, the ladies put on light wraps, and about 10 o'clock, when I retired, the mercury stood at 72 degrees.

On the Fourth of July, where we lay in quarantine in the Guayas River, thirty-five miles below Guayaquil and three degrees south of the equator, it was doubtless cooler than in either Chicago or New York. At 8 a. m. the thermometer marked 74 degrees in the companionway, at noon it was 76 degrees, and at 4 p. m., it was 81 degrees. On July 5 it was 78 degrees when we went ashore to the city of Guayaquil at 8 o'clock in the morning. It was 84 degrees at 10:30 in the

American consulate and 81 degrees at the club where we lunched at noon. That evening, about 10 o'clock, the thermometer stood at 67 degrees in the chartroom of the steamer.

Similar temperature is found all along the coast south of the Bay of Panama, and, as I have said, is chiefly due to the Antarctic current discovered by Baron von Humboldt in 1808. It is a cold stream that comes up around Cape Horn from the frozen zone of the south to cool the atmosphere of the west coast, just as the gulf stream brings the warm water of the tropics to moderate the climate of Europe and North America, for you know that if it were not for the gulf stream everybody in England would be living like Esquimos, and potatoes would never grow in Ireland.

The Humboldt current splits near Cape St. Lorenzo, Ecuador, which is the westernmost point of the southern continent. One part flows westward to the Galapagos islands. The other follows the coast north to Central America, where it meets the Mexican current coming from the northward and forms a whirlpool which mariners avoid. Thus has a beneficent Providence made life endurable in the tropics. On the east coast of South America the thermometer will average twenty degrees higher in the same latitude than on the west coast, and in the matter of health there is even greater difference.

The ships built for this latitude and smooth sailing are considerably different from those one usually finds on salt water, the decks being open almost to the water's edge, and the staterooms opening on them instead of on the saloons and passageways. The doors are blinds, with wide slats; the windows are nearly half as large as those of an ordinary residence, so that the rooms are cool even in the warmest weather. On some of the steamers hammocks are swung under the canvas awnings on the upper deck and passengers can sleep in them if they choose to, although strangers are cautioned against it until they become acclimated. For a lazy man there is no more agreeable occupation than to lie in a hammock on a south Pacific steamer and wonder why so many people like to work.

The days and nights are of equal length. The sun knocks

off work promptly at six o'clock in the evening. There is no twilight, no gloaming, no interval whatever between daylight and dark—only a brilliant illumination, the sudden disappearance of a red ball into a blue ocean, a spread of flame color over all the western sky for a few minutes and a purple haze in the east.

Then the surface of the ocean, like the heavens, is lighted with millions of strange and shifting stars, for the water is so impregnated with phosphorus that each tiny wave is tipped with light, and the foam that follows in the wake of the vessel is often like a stream of fire. Sometimes you can see porpoises swimming along the bow of the vessel livid with phosphorescent light and followed by a streak of sparks like a comet's tail. † The southern cross, with the right arm tipped out of the proper angle, lies straight ahead, in the midst of myriads of unknown worlds that look strange to those accustomed to the northern constellations. Under the left arm is a large black spot in the heavens, brightened by only one modest star. The sailors call it the "devil's dinner bag." Over the stern of the vessel in the early evening you can plainly distinguish the familiar constellation of the "great bear," but it goes to bed with the children.

There is a system of "deck traders" on this coast that I believe is practiced nowhere else in the world. When a vessel leaves Valparaiso or Panama, the termini of the voyage, it carries half a dozen itinerant merchants, who spend their lives aboard carrying on a retail business in fruits, vegetables, dry goods, notions, crockery, jewelry and other necessities and luxuries of life of unlimited variety, from needles and pins to parrots, monkeys, singing birds and gamecocks, and on our ship one of them actually carried a donkey to be sold on commission.

There was a good-natured old woman of capacious embonpoint on board the Palena, who has made every voyage with our captain for eleven years. She has the choice corner on the lower deck, and when approaching a port spreads out her wares in a most attractive manner and sits in the midst of them in a big rocking chair, swaying a palm-leaf fan and

carrying on her bargains and gossip at the same time. At night time and between ports she puts her goods away in chests, boxes, bags and barrels, unfolds a wire woven cot, unrolls a mattress, spreads a pair of clean sheets and a soft pillow with edging on the slip, and, in the midst of her merchandise, lies down to pleasant dreams.

The Guayas is a mighty river, one of the largest in South America, and drains an enormous area on the western slope of the Cordilleras. Guayaquil is thirty-five miles from its mouth. There are ninety-one rivers in Ecuador, composing two great systems, one flowing eastward into the Amazon and the other westward into the Guayas. The eastern slope, or Amazon section, is completely covered with vast forests. The western section contains the inhabited portion of the country and is cultivated along the coast. In the mountains, the earth, like the air, is dry, and irrigation is necessary to produce ordinary crops, but this portion of the country is so sparsely settled that a very few acres serves to supply the wants of the people, and most of the land is given up to pasturage.

It is said that every crop that grows can be produced somewhere in Ecuador, and it is probably true, for the two great ranges of the Andes, sloping on the one side to the sea and on the other to the jungles of the Amazon, furnish almost any climate and degree of moisture or aridness and every variety of soil. The foothills and the mountains are filled with valleys, canyons, gorges and plateaus, while between the two ranges, which are from forty to sixty miles apart and run nearly parallel to each other, and the Pacific coast there is a great basin, from 7,000 to 10,000 feet above the sea, which is almost denuded of timber, but is capable of sustaining a large population. Indeed, it was densely settled before the Spaniards came, but their cruelty almost exterminated the aboriginal inhabitants.

Nowhere on earth, except in Bolivia, can be found such an assemblage of mountains. Along the eastern chain are found eleven peaks above 15,000 feet in height, with Chimborazo as their chief, whose peak is nearly 22,000 feet above the sea.

There are seventeen other peaks ranging from 10,000 to 14,800 feet high. Ten of them are active volcanoes, and have covered a large area around them with ashes, lava and pumice stone. The volcanic ashes, however, have rare fertilizing qualities and are soon covered with vegetation wherever there is moisture.

On either side of the Guayas River is a dense growth of tropical vegetation, steaming under a vertical sun—the very hothouse of nature, where plants and trees spring up almost in a night to wage a desperate war for existence and where every monarch of the forest is attacked by tons of vines, mosses, orchids and other parasites until his trunk and branches are covered and the exhausted giant is often borne to earth under their weight. Back of these forests, on the foothills on either side of the river, is a vast area of fine pasturage, which gradually rises until the Andes are reached. The snow line in Ecuador is higher than at any other place on earth, because it lies directly upon the equator and the rays of the sun fall perpendicularly at all seasons. Mount St. Bernard, the highest point of permanent human habitation in Europe, is only 8,377 feet above the level of the sea, while the Tambo de Antisana, one of the highest towns in Ecuador, lies at an elevation of 13,360 feet.

The Isla del Muerto, or Dead Man's Island, which lies in the Bay of Guayaquil, bears a striking resemblance to a corpse floating on its back. The head, the neck, the breast, the swollen stomach, the legs and turned-up toes appear even more lifelike than the "white woman" that lies upon the summit of the volcano Issatazhuatl, near the City of Mexico.

The Guayas River has a peculiar way of splitting into two parts a few miles below the city of Guayaquil, in order to admit the incoming tide. It is a broad, swift, turbid stream, resembling the lower Mississippi. The channel is from thirty to forty feet deep, but on either side the water is quite shallow, and there is usually a current of about seven miles an hour. It is a curious fact that when the tide comes up from the ocean, as it does twice a day, it is not met with resistance,

but the river, with true Spanish politeness, gives it the middle of the road, so to speak, and retires to both sides of the channel. Thus may be seen the phenomena of three streams, one flowing up in the center at the rate of about four knots an hour, and the others flowing down on either side at the rate of seven knots. One is salt, two are fresh. One has a deep green color; the other two are a muddy brown, and the dividing lines are further marked by a fringe of froth, floating weeds, driftwood and other debris, which seems bewildered, or perhaps indifferent, and stands still, without joining either stream or flowing in either direction, until the tide turns and all the waters commingle and go down together to the sea.

The Guayas is a great place for alligators, and the natives have a curious way of killing them for their hides. They take to the water naked, with the exception of big straw hats on their heads, with the brims a yard wide, and long knives in their teeth. They swim along among the 'gators, and when one of the reptiles opens his jaws and goes for him the swimmer dives, leaving his hat on the surface for the alligator to chew on, and plunges the knife into the monster's vitals.

In tropical South America there is always a choice of climates,—three zones they are called,—varying in temperature from perpetual summer to eternal winter. Along the coast is the first zone, or the *tierra caliente* (hot earth), where the temperature seldom goes below 85 in the shade, and usually lingers in the neighborhood of 100. This is the land of the banana, the pineapple, the sugar cane, the palm and the orchid. The next zone is the *tierra templada*, comprising table lands and foothills from three thousand to seven thousand feet in altitude, where the climate is a perpetual spring, where it is June from January to December, and where coffee, as well as all the fruits, vegetables and cereals of the temperate latitude are grown. Then, farther up the Andes is the *tierra fria* (cold earth), on the edges of which the cattle browse; but beyond them the snow lies always, even under the equatorial sun.

The principal cities and most of the settlements are on the coast, because of the difficulties of transportation; and in the

interior beyond the mountains, lies an empire unmeasured and unexplored, watered by the mightiest of rivers, shaded by forests whose limits are unknown, and abounding in all the resources that man has found in other parts of the globe. The branches of the great river Amazon intersect those of the Orinoco, and a man in a canoe may enter the mouth of one and, sailing through the interlocking streams, emerge from the mouth of the other without leaving the water. From the sources of the Parana, that great natural thoroughfare of the southern half of the continent, it is but a trifling distance to the head of navigation on the Amazon. Within the embrace of these great streams are supposed to lie the richest mineral deposits in the universe, and there the ancient voyageurs located the mythical city Manoa, the El Dorado of which the world dreamed for centuries, and which invoked more ambition and more avarice than anything man has known.

There is good reason to believe the government of Ecuador will permit the United States to establish a naval station on one of the Galapagos Islands, providing we will pay the price. Ecuador has scruples against selling its territory, but would be willing to lease, provided the other American republics would not object. Therefore, if satisfactory terms can be arranged a naval supply and coaling station will sometime be established on San Cristobal, or Chatham Island, as it is named upon the English maps, the fourth in area of the sixteen islands that compose the archipelago.

Chatham Island is owned by a naturalized American citizen named Manuel J. Cobos, who has a plantation there called the Hacienda del Progreso. He has already signified his willingness to convey to the United States all the land and water rights, timber and other building material and everything else in his possession that may be needed for the naval station without compensation, but the government of Ecuador, which exercises sovereignty over the archipelago, will expect to be paid a liberal sum, either in a lump, or in annual installments.

Captain Tanner, of the navy, who made a thorough survey of the islands in 1891, when the subject of a lease or purchase was under consideration by the Harrison administration,

reports that Chatham is the most desirable in every respect of all the islands, having plenty of water, timber and other facilities, a healthy climate, a fertile soil and good harbors. Señor Cobos is the only resident of the island. He has a fairly good house and owns a group of cabins that are occupied by his employes.

The Galapagos islands are of volcanic origin, being mountainous, with prominent peaks, fertile foothills and numerous extinct craters. Chatham is covered with trees and other vegetation, and the foliage is always fresh and green.

The location of the islands not only makes them desirable as a naval station, but the certainty of the construction of a canal across the isthmus at some time or another under the auspices of the United States makes their strategic importance of first consideration. From Chatham Island it is 620 miles to Guayaquil, 840 to Panama, 1,010 miles to Callao, 2,190 miles to Valparaiso, 2,430 miles to Lota, Chile, where the coal mines are, 2,990 miles to San Francisco, 4,200 miles to Honolulu, 5,699 miles to Pago Pago, where we have our naval station in the Samoan Islands, 5,900 miles to Auckland, 7,100 miles to Sydney, 7,800 miles to Manila, and 2,831 miles to New York, by way of the Nicaragua Canal.

The government of the United States has time and again been guilty of great folly, and if the Fillmore administration had been possessed of ordinary foresight and patriotism we would have owned one of the Galapagos Islands now. In 1850 William Hollister, of Buffalo, being en route to California, met at Panama Gen. José Villimil, and was persuaded to join in a revolutionary movement in Ecuador, which proved successful, and Villimil became president of that republic. At the end of his term he came to Washington as the minister of Ecuador, and through Hollister offered the United States the island of St. Charles as a supply station for our ships in the Pacific. The secretary of the navy promised to send the sloop St. Marys, which was then cruising in the Pacific, to make a survey and report and take possession of the territory, but in some manner the matter was overlooked and forgotten. There is no record in the files of the State Department or the navy of any

formal reply to the Villamil proposition, which was probably due to a change of administration shortly after, in 1853.

And away back during the War of 1812, we came very near taking the islands by "expansion." Then they still belonged to Spain. In those days there was a great deal of whaling in the South Pacific, and the whalers from Dundee being much more numerous and more powerfully armed with cannon, and commissioned with letters of marque and reprisal, drove the Nantucket and New Bedford whalers out of that part of the ocean. To protect those that were left and administer proper punishment, Commodore Porter went around the Horn in the frigate *Essex* and sailed for the Galapagos Islands, which was the rendezvous of the British whaling fleet. On Chatham Island he captured a dry water cask that was used by the Britishers as a postoffice, and overhauling the letters it contained he got a good idea of the movements of the fleet. Hence, within the next three or four months he captured or destroyed every British whaler on that part of the sea and took prizes valued at more than \$5,000,000. There were so many prizes to take charge of that the only officers left on the *Essex* were the commodore and the surgeon's mate. Every officer on the frigate was detailed for the command of a prize, even the doctor and the chaplain, the paymaster and the captain of marines, including Mr. Midshipman Farragut, who was then only 12 years old, but who proved himself quite capable of commanding a whaler of 400 tons.

With all this fleet around him, Porter, who was only a captain, broke out the pennant of a commodore and took possession of the Galapagos Islands under the flag of the United States. Unfortunately, however, he could not spare the men for a garrison, and when he sailed away the only thing he could do to hold his title was to leave the stars and stripes floating from a flagpole on Chatham Island.

When Commodore Porter got home, instead of being hailed as a hero, he was court-martialed for disobedience of orders, and for having exceeded his authority. He was found guilty and sentenced to suspension for six months, which made him so indignant that he resigned his commission and went to

Mexico, where he organized a navy for that young republic soon after its independence. He was the father of the late Admiral Porter.

The future prosperity and material development of Ecuador depend upon the construction of a railway from Guayaquil to Quito and other points in the interior. This has been realized by the leading men of the country for many years, and each president has attempted with more or less energy, to carry out the scheme. Garcia Moréno, who was the greatest man Ecuador has produced, and who was dictator there from 1861 to 1875, laid the first rail in this country and completed a track about sixty miles long from the head of navigation on the Guayas River to the foot of the mountains, where the mule trail to Quito begins, but he got no farther, and under his successors the road became overgrown with the rank vegetation of the jungles and was practically abandoned. Camaaño cleared away the brush, bought a couple of new engines and repaired the track and it has since been operated for the government by an American manager. Alfaro determined to complete the road to Quito, and one of his first acts when he assumed power was to enter into a contract with Mr. Archer Harmon for the construction of the road on account of the government, from a place called Duran, on the east bank of the Guayas River opposite Guayaquil, to Quito, a distance of, perhaps, 350 miles. The contract was approved by congress, and Mr. Harmon, of Virginia, organized a syndicate in New York and London to supply the capital, made a survey, organized a corps of engineers and a construction company, and commenced work in June, 1899.

Mr. Harmon is to receive \$12,282,000 in first mortgage 6 per cent bonds, interest and principal secured by a lien upon the customs revenues of the republic, with a sinking fund sufficient to redeem them in thirty-three years. He is also to receive \$5,250,000 of preferred stock, with 7 per cent interest guaranteed, and 51 per cent of the common stock. In other words he is to receive \$17,532,000 in stock and bonds guaranteed by the government of Ecuador for the construction of the road, and also a title to the sixty miles of track which is now

in operation between Duran and Chimbo, but which will have to be rebuilt, as the roadbed is poor, new ties and rails are badly needed and the gauge must be changed to forty inches according to the contract for the extension.

The railroad cannot be built with local labor. There are probably 600,000 Indian peons in the country. Not one of them owns an inch of real estate, and most of them are more or less in a state of slavery under the planters or haciendados upon whose estates their families have lived for centuries. They are short, broad and muscular, with skins of copper-color, resembling that of the North American Indians, long, straight, shiny hair and scanty beard, or none at all. They resemble the Pueblo Indians of New Mexico and the Aztecs of Mexico. Their predominant characteristic is melancholy. They are reticent and extremely distrustful and look upon all strangers with suspicion. The Indian of the interior is so suspicious that he will sell nothing at wholesale, nor will he trade anywhere but in the market place on the spot where his forefathers have sold garden truck for three centuries. Although travelers upon the highways meet numerous Indians on their way to market bearing heavy burdens of vegetables, forage and other supplies, and driving droves of donkeys similarly laden, nothing can induce an Indian to sell anything from his stock until he has reached the place where he is accustomed to offer it for sale. He will carry his load ten miles and dispose of it for less than he was offered at a point half that distance, simply because he is a slave to custom and is suspicious of everything in the way of an innovation.

A gentleman who lives in one of the towns of the interior told me once that he had been trying for years to persuade the Indians who passed his house every morning with packs of alfalfa to sell him a supply regularly at his gate, but they refused to do so. Consequently he was compelled to go four miles into town to buy alfalfa that was carried past his own door, but the seller willingly carried it back and delivered it, thus packing his load eight useless miles because it had been the habit of his family to do so.

My friend also told me that no woman in the market would

sell more than a dozen eggs to one customer, not even if she were offered double the price. She would give him one dozen eggs for 10 cents, but would not sell five dozen for \$1; she would give a gourd full of potatoes for a penny, but would not give five gourdfuls for 10 cents or 20 cents or any other price, simply because she was not accustomed to sell potatoes in such quantities and any attempt to induce her to depart from custom excited the suspicion which is the predominating trait of her race. Four centuries of Spanish tyranny, duplicity and deception have destroyed the faith of the entire race in white people, but when their confidence is once gained nothing can shake it. The devotion between the peons and their masters is often similar to that which existed between the negro slaves in the south and the members of the kindly families in which they had been reared.

It is easy to see that such labor would be very intractable in a railway construction gang, even if it could be obtained. It would be difficult, also, if not impossible, to induce the Indians to use modern implements. They are accustomed to their own primitive methods of labor and their own rude tools, and will not use anything else.

The first section of the road, as I have said, is now in operation from Duran, a little town across the river from Guayaquil, across a low alluvial and swampy region which lies between the Andes and the ocean, and is partially reclaimed and planted to sugar cane, coffee, rice and other crops. Chimbo, the eastern terminus of the road, lies at an elevation of 1,130 feet at the foot of the western range of the Andes, which run parallel with the Pacific coast. The second section, from Chimbo to Sibambe, runs for sixty miles through the forest slope of the mountain to an altitude of 8,136 feet, and is the most difficult and expensive in construction. The country is very rough and rocky, the rise is rapid and the track will have to be cut out of the hillside.

The remainder of the road, from Sibambe to Quito, 230 miles, will run through what is known as the inter-Andine plateau, which lies between the two great ranges of mountains known as the Andes and the Cordilleras. In Ecuador these

parallels are connected by eight transverse ranges, nearly equidistant from each other, which arise like buttresses to support the main chains, and have been compared to the rounds of a gigantic ladder. In the parlance of the country they are known as "nudos," or knots. These ridges rise to an elevation of from 10,000 to 15,000 feet, but can usually be crossed through passes 9,000 or 10,000 feet above the sea. The basins between them have a mean elevation of 8,000 feet and abound in every crop that the world knows.

There are to be no engineering difficulties in this section of the projected railroad, and a considerable portion of the route is already graded and prepared for the rails in the "Via Real" of the Incas, one of the most magnificent pieces of highway construction that was ever carried out, built several hundred years before the coming of the Spaniards and yet in good condition, notwithstanding the lack of repairs.

In this part of the country is found the largest portion of the population and the greatest area of cultivated soil in Ecuador, which, however, has been inaccessible to markets except by rough and uncertain mule paths. The landowners are very little in advance of the peons. They are indifferent to modern methods and machinery in the cultivation of their estates; they prefer the primitive methods that were practiced by their forefathers; they hold their labor in a state of peonage; they know nothing of the outside world; very few of them have ever been a day's journey away from the spot upon which they were born, and the entire community have advanced but little during the last 200 years.

This is the class of people and this is the character of the country which President Alfaro desires to reach with the "obra redentora," or "redeeming work," as they call it, of the railway. This is not, however, a new enterprise, as I have said. It has been attempted again and again by previous presidents, but this time the promoters seem to be in earnest and have the money to carry out their plans.

It is asserted that cacao is the most profitable crop that grows, that is, provided the locality, the climate and other conditions are favorable. It requires a low, moist, rich soil,

the bottom lands of a river preferred, a copious rainfall, a high temperature and a hot sun. The average cost of production under such conditions is about \$3.50 per quintal and the market price is \$12 gold per quintal. It is much better than coffee or wheat, corn or cotton, because the price does not fluctuate and the demand is always greater than the supply. There are drawbacks, of course. A drought will affect the yield of the trees considerably and sometimes destroy the entire crop. Birds and monkeys and various parasites attack the trees so that continual vigilance is necessary to protect them, but the expense is small, and a good crop can usually be depended upon.

Ecuador produces nearly one-third of the entire cacao used in the world. The total is estimated at 75,000 tons. The average crop in Ecuador is 22,000 tons. Trinidad and the other British West Indies send an average of 19,000 tons to market, 7,500 tons comes from Brazil, 6,000 tons from Venezuela, 4,500 tons from Dutch Guiana, 4,000 tons from Haiti, 3,000 from Colombia, 8,000 from Africa, 2,500 tons from the East Indies, and smaller amounts are grown in Mexico and the countries of Central America, but little more than is required for home consumption.

Cacao is a native of Mexico and was grown in large quantities by the Aztecs at the time of the conquest. They called it "chocolatl." The Spaniards called it "cascara quahuitl." The history of Ecuador does not tell when the plant was introduced there, but the soil and climate were recognized as very favorable and as long ago as 1741 the statistics record an annual production of 3,000,000 pounds. There are now about 45,000,000 trees in the country. These are planted in rows four or five yards apart and are usually grown from the seed. The tree reaches a height of twenty or thirty feet, the trunk attains a thickness of eight or ten inches and the blossom is a small, pink, waxlike flower. It grows directly out of the bark of the trunk and branches, and not at the end of twigs, like other fruits. When it fructifies the petals fall off, and the stamens in the course of two months develop into an oblong pod or melon with dark golden rind, about eight or ten inches

long, and filled with beans about the size and shape of an almond. These are imbedded in a gummy pulp and are removed by the use of a rude implement made from the rib of a steer. When the pods are ripe they are cut from the tree by pruning knives attached to the ends of long poles. The pods are opened, the seeds are extracted and spread upon a floor of cement or split bamboo for three or four days under the hot sun. Then they are put in sacks and shipped to Guayaquil, where the cacao is cleaned of splinters, dirt and defective beans, assorted according to quality and again exposed to the sun before being packed in sacks for shipment to the United States and Europe.

France is the greatest consumer, taking about 16,000 or 17,000 tons a year. Germany comes next and often surpasses France. England uses ten or twelve tons annually and the United States 15,000 or 16,000 tons.

Cacao is the basis of several important medicines, the active principle agent being theobroma, a powerful organic reagent. Under chemical analysis the cacao bean shows forty-nine parts fat, nineteen parts albumen and twelve parts starch. The largest amount is consumed in the manufacturing of confectionery and other forms of food. The shells of the seed are roasted and sold as a substitute for tea and coffee. The oil extracted from the seeds is the basis of tonics, pomades and butter which has remarkable curative properties. The pulp of the pod is a favorite fodder for animals.

Although the production of cacao in Ecuador is already considerable, the area under cultivation is insignificant compared with that available, and a large field for enterprise is offered there which the natives are slow to utilize, chiefly because of the lack of capital and energy. There is a gradual increase in the product of late years and the industry will continue to grow because it is so profitable. The largest plantations are owned by wealthy Ecuadorians, who find it to their pleasure to reside in Paris and receive their profits through the administrators they leave in charge of their estates.

A first-class hacienda is worth about \$150,000 in Ecuadorian silver, which is about \$75,000 gold, which includes all the

improvements, appurtenances, implements, and other assets belonging to the plantation, including the money advanced to the peon laborers, all of which generally amounts to about 20 per cent of the total value, leaving about 80 per cent as the cost of the trees. It is much cheaper, however, to buy wild lands and plant new orchards. Large tracts can be obtained from the government for \$1 (gold) an acre or thereabouts, or from private individuals anywhere from \$4 to \$15 an acre, but the title to private lands often are defective and purchasers should be extremely careful in having them examined. The laws affecting the transfer and inheritance of real property are so complex and confusing that Solomon himself would find it difficult to administer them. A title direct from the government is not only clear and indisputable, but the government lands are quite as good as any that can be found in private hands.

In starting a new plantation the common practice is to make a contract with a "sembrador," a man of experience in the business, who will agree to clear the land and bring an orchard to a state of bearing with a fixed number of trees at the rate of from 20 to 30 cents a tree. The proprietor furnishes the land and advances money to the "sembrador" from time to time until the trees begin to bear fruit, when he pays the final installment and takes the property in charge.

The "sembrador" first clears the ground of underbrush, leaving the large trees and the wild cacao trees, which are frequent in all the forests having been propagated by seed which monkeys and birds have scattered. The wild trees are not so prolific, but improve with cultivation.

While the plants are young the space between them is planted with corn, arrowroot and bananas, with the double object of protecting the delicate shoots from the sun and securing an immediate income from these crops. The cacao plant begins to bear when five or six years old. It reaches maturity in the tenth year and continues to bear for several generations. The first few years the trees are pruned occasionally in order that they may "run to fruit" rather than to foliage, but no fertilizer is used except leaves and other vege-

table matter found in the vicinity, and the only attention necessary is to keep the orchard clear of weeds and the trees free from parasites.

The average yield is about one pound of beans per tree, but that may be increased considerably by cultivation and careful pruning. No scientific farming has ever been done in Ecuador. The most primitive methods are in use. There has been no change for two centuries, and there is no telling what the application of intelligence and botanical science to the cultivation of cacao might result in. A hacienda of 100,000 trees will therefore produce 1,000 quintals of beans at a low estimate, making a liberal allowance for failures and accidents. At the present market price this would be worth \$22,500. The cost of the crop, according to the present primitive methods, would be about \$7,500, including taxes and transportation to Guayaquil, leaving a profit of \$15,000, which experts tell me is far below the average income of plantations containing 100,000 trees, which are valued in the mortgage banks at \$75,000 gold when in good condition.

The banks of Guayaquil are accustomed to make advances to the planters; in fact, the most of the latter live ahead of their incomes, as the cotton kings of the south used to do before the war, and pay 10 and 12 per cent interest. Mortgage loans are made for twenty-one years at 9 or 10 per cent, at the rate of 50 cents for each tree in bearing.

Native Indians are generally employed upon the plantations, and paid from 50 to 80 cents a day in silver, which is equivalent to about half as much in our money. They are brought from the mountains by employment agents when needed, under contracts which are as bad and usually worse than slavery. There are no laws for the protection of the poor. All the statutes are in the interest of the rich. The contracts are registered in the police courts, and no laborer can leave an employer without the latter's consent, or as long as he owes him money. Therefore the first step in the relation of employer and employed is for the latter to overdraw his wages at the plantation supply store, which he is always eager to do if permitted. Then he becomes a slave for life,

for, unless the employer wants to get rid of him, the debt is never canceled. It may amount to only a few dollars, but it is the cause of servitude all the same. If the peon runs away the planter reports the fact to the police, who recapture him, and the expense of the pursuit and prosecution is charged against him, and fastens his shackles all the firmer. If he wants to change his residence he must get somebody to buy him by paying his debts. If his employer wants to get rid of him he sells him for the amount of his indebtedness to some other planter, without consulting him or his welfare.

In this way a system of peonage has come about that is the curse of the country. A peon is not worth half as much as a mule, and therefore is not so well treated. He is often abused and ill fed, compelled to live in unhealthy surroundings and under the most degraded conditions, with even less care and comfort than his forefathers enjoyed during the days of legalized slavery. The natural consequence is a rapid decadence of the race, both morally and physically, for in his desperate state the peon can have no self-respect, no ambition and no purpose, except to forget his misery in drink and other vices that not only undermine his constitution, but are transmitted to his children, who grow up among similar conditions to enter the employment of his master as soon as they are old enough to be useful.

Of course there are exceptions to this rule. There are some haciendas on which the laborers are treated with patriarchal kindness and to which they are devotedly attached. The same families have lived there for generations and feel a proprietary interest in the plantations, but peons are seldom educated, they seldom advance beyond the conditions in which they were born and there is no future for them or their children.

Until 1899 the educational system of Ecuador was under the control of the priests, and the parochial schools offered a meager opportunity for the children of the poor who live in the cities and villages, to obtain the rudiments of learning. They were taught to read and write and the simple rules of arithmetic, but the attendance was comparatively limited.

Not one child out of ten in the country attended even these schools, and outside of the towns there were no facilities whatever. Therefore about 75 per cent of the population of Ecuador is illiterate.

Suppose 10,000 youngsters were taken annually from the mud huts of the cacao plantations and trained to be good citizens. In fifteen or twenty years the laboring classes of Ecuador would be entirely regenerated and there would be some hope for this country. The children are very bright. They have quick perception and retentive memories, but when they become 21 years of age they seem to lose their wits and are transformed into stupid, stolid, stubborn creatures with a limited degree of intelligence, and incapable of being trained to anything but the roughest sort of labor. This transformation is explained by biologists on the theory of arrested development—that the mind becomes dwarfed for lack of exercise, just as a limb might be. Men who have suffered solitary confinement have lost the power of speech, and the peons of Ecuador, having had their mental faculties developed to a certain degree in childhood, become dull, because their reasoning powers and perceptions are no longer employed.

V

THE DECEPTIVE CITY OF GUAYAQUIL

From the deck of a steamer in the evening Guayaquil looks like a little Paris. It lies along the bank of the river, and the main street, called El Malecon, stretches for two miles or more, from a shipyard to a fortress-crowned hill, El Cerro, where there is a gloomy-looking fort with two decrepit old guns, which are supposed to protect the shipping in the harbor. The Malecon appears to be lined with long blocks of beautiful marble and stone, and in the evening every window is brilliantly illuminated. The imagination of the stranger can find plenty of material to build romances. Here appears a row of palaces, then a group of clubs, and beyond a series of blazing ballrooms. Some people recognize a resemblance to Algiers and Constantinople in the water front, or the little cities that hug the beautiful bays of Italy. Consul de Leon says it looks like New Orleans, and there is a resemblance to the levees that lie along the river, where the freight is piled up in little mountains waiting to be stowed away aboard the steamers.

In the morning from shipboard the illusion is not dispelled, but the view is quite as imposing. The architecture is pure and graceful; much of it is of the Moorish order, the rest is on more delicate lines. The long portales, or arcades, that front the river, are like the shops on the Rue de Rivoli, in Paris, and above them are balconies sheltered by blinds and awnings of gay canvas, which have an oriental look, and occasionally you catch a glimpse of a group of gentlemen or ladies seated before the windows looking out upon the long street which is at once the principal retail shopping place, the favorite promenade and the docks where lighters are loaded with cargoes for the steamers anchored in the river.

Along this street is a little railway on which tiny cars, drawn by a diminutive locomotive, bring from and take to the various warehouses heavy loads of merchandise, cocoa, sugar and other freight, which is piled upon the docks according to a classification under the direction of the customs officers, who collect an export as well as an import duty upon everything that comes and goes. In the center is a custom house built of corrugated iron from Pittsburg, with the gay flag of Ecuador, whose broad stripes of yellow, blue and red float from a pole that rises from the little cupola.

At the southern end of this long street is a busy market, where hundreds of curious boats and broad-bosomed rafts loaded with vegetables, fruits and other produce from the upper river and its tributaries moor every morning at early dawn and sell their cargoes to the grocers and hucksters and other patrons. Still farther down is a shipyard where gangs of men are busy building small boats. Occasionally a curious little steamboat, that looks like a turtle, comes puffing and snorting along with a load of passengers and freight and uses a screeching whistle to proclaim its superiority of speed and size over the humble dugouts and balsas.

Behind this picturesque scene rise the artistic walls of the houses and the slender spires of a dozen churches, each crowned with a gilded cross, and the city creeps up the rugged hills that form a background to the picture. Between two of them, in what they call La Silla, is a cream-colored hospital, the largest and most conspicuous object in the landscape.

But when you go ashore you find that you have been the victim of an optical illusion. The imposing edifices of marble are simply shells of plastered bamboo, trimmed with ornaments of stucco and painted in artistic designs. The elastic houses are constructed with a view of defying earthquakes and admitting the greatest amount of air consistent with privacy, and the architects have succeeded to a remarkable degree. Every design has a purpose, and the chief end of man is to secure the highest degree of comfort and luxury in an abominable climate.

There has been a remarkable improvement in Guayaquil since I first visited this city, fourteen years ago. This is due chiefly to a big fire and a progressive president. In October, 1896, about two-thirds of the town was entirely destroyed, at least three-fourths of the inhabitants were rendered temporarily homeless, and many lost everything they possessed. The greatest destruction occurred in the older part of the place, where some of the blocks had been standing for 200 years and were in an advanced stage of dilapidation and decay. There had been fires before—in 1707, 1764, 1830, and 1841—but none was so destructive, and it was only a stiff wind from the south that saved the west of Guayaquil in 1896.

The city has also suffered severely from volcanic eruptions and earthquakes, being almost entirely destroyed in 1587, 1660, and 1797. The last serious earthquake occurred in 1859. These were genuine tierra-motors, or "world-shakers," when the battalion of volcanoes, which, under the command of Chimborazo, guards this coast, got reckless and shook the earth with such mighty force that mountains crumbled, canyons yawned, the bowels of the earth were exposed, rivers came tumbling down in torrents where were only dry valleys before, and the bluffs that lined the coast tumbled over into the sea. These great cataclysms that change the topography of the country occur only once in a century or so, but "tremblors," a gentler kind of shakeup, and "trembloritos," little earthquakes, are quite common.

Consul-General de Leon described one that took place in May, 1899, when the elastic houses bent and swayed like a tent of canvas in a gale, when the walls took a diagonal position and then reversed themselves, the pictures swung like pendulums, and tables, bureaus, and chairs, danced about on the polished floors. On such occasions everybody rushes into the streets to avoid the falling tiles, or stands under the nearest doorway to escape the rain of plaster. The houses are built especially for such emergencies. The walls are of split bamboo, the timbers are joined by bolts of iron, with sufficient room to play in, and the ceilings are of cotton sheeting, stenciled or painted in pretty designs in imitation of fresco.

When they build a house in Guayaquil, they first level the ground and then lay a low foundation of stone. Upon that are laid heavy timbers of *lignum vitæ*, to which the uprights, the stringers, and other heavy timbers, are bolted with iron, as I have described. Then slender pieces of lighter timber are run up and down and covered on the outside and inside with strips of split bamboo lashed together with cord or withes into slabs one foot or eight inches wide. Sometimes the roof is thatched with straw and palms, sometimes it is made of tiles, and a great deal of corrugated iron is used. The latter is the favorite material for warehouses and similar structures. It is the largest article of import into this country and is rolled very thin for building purposes.

Wide balconies are built on the outside of all the houses from the ground to the roof and inclosed with blinds. There is no glass, there are no chimneys and no fires except for cooking. In the kitchens there are few stoves except among foreigners. The natives use an arrangement of masonry like a blacksmith's forge and burn charcoal for fuel. The ingenuity and skill of the cooks is so great that they can prepare a dinner of six or seven courses for twenty people over one of these contrivances without the slightest trouble. The interiors of the houses are finished in pine, cotton drilling is used for ceilings, the floors are tiles or polished wood, and the walls are hung with cloth or paper. The outside of the house is plastered with cement and then painted in artistic designs and fanciful colors, or in imitation of stone or marble. The fire was a great blessing, for the entire area that was devastated is now rebuilt with substantial and expensive structures, with modern improvements, which add greatly to the appearance of the city, as well as to the comfort of the people.

Some of the houses of the wealthy are sumptuously furnished, but as a rule they contain very little of what northern people think necessary. Carpets, upholstered furniture and hangings, are dispensed with as much as possible, for they shut out the air, retain the heat, and furnish shelter for fleas and other insects, which are the bane of existence. The floors are polished and bare, or covered with Japanese matting, the

furniture is almost entirely cane or rattan, the beds are of iron or canvas cots without springs.

The poor live in unplastered bamboo huts, thatched with rushes, and floors of mud. A large part of the population live on the water, as they do in Canton, China, having houses of bamboo built upon rafts, called "balsas," similar to those the Peruvians used when Pizarro came, which are made by lashing together logs of the balsam tree or hollow trunks of bamboo. The balsam is a species of timber nearly as buoyant as cork. A log forty feet long and fifteen inches in diameter will carry two tons. Twenty or thirty lashed together will therefore sustain a large cargo. In the center of each balsa is a hut of bamboo, in which the "marineros," as the owners are called, and their families live from youth to age, raise pigs and chickens and carry their entire fortunes. The rafts are propelled by sails or oars, and are taken from place to place, according as business is offered. It is said that from the balsas our shipbuilders got the idea of seaboarders for yachts. The balsam logs are so light that they drift easily, and in order to give them purchase to take the wind the natives shove strips of bamboo down between the logs three or four feet into the water.

Another interesting kind of craft which are seen not only around Guayaquil, but along all the Peruvian coast, are called "caballitos," or "little horses." They consist of bundles of reeds or rushes lashed together like sheaves of wheat and forming a float or raft from ten to twenty feet long and from four to six feet wide. The ends taper up like those of a gondola. They are very light and buoyant and convenient for portage. When not in use they are taken out of the water and set up on one end to dry. A cabillito will carry two men and several packages of freight, and it is customary to lash several of them together to carry larger cargoes. They are very uncomfortable to ride in, however, as the slightest agitation of the water affects them and there is nothing to protect the cargoes or passengers. They are used chiefly for fishing and for bringing down from the interior to market vegetables, fruits and other articles which are not injured by being wet.

Revolutions have been frequent in Ecuador, and often destructive of life and property. In order to protect themselves foreign residents were formerly in the habit of placing above the entrances to their houses, or in some other conspicuous place a facsimile of the flag of their nation, painted on tin or wood, with the legend in plain letters, "This is the house of an American," or "This is the house of an Englishman," or a German or a Frenchman, as the case might be. But you see no more of these signs in the new part of Guayaquil, which is evidence of improvement in political affairs.

The cathedral is an imposing structure, when viewed at a distance, but when you approach it closely you find that it is built entirely of bamboo splints lashed together with wisps of vegetable fiber, thinly coated with clay, molded in rococo designs and then whitewashed to look like marble. High mass is celebrated at 6 o'clock every morning with a large parade of priests, with splendid vestments and fine music, but it is attended only by the feminine portion of the population. Men are seldom seen at church, except on feast days and at funerals.

One of the first things a stranger notices is the number of dark-eyed women with their heads covered and their faces half concealed with black "mantas," that he meets on the street early in the morning, either coming from or going to church. Low mass is celebrated in all the churches as early as 7 o'clock, and the women attend to the religion for the entire family. You seldom see a man at church, except at a funeral or a wedding or on a feast day. There are no pews in the churches, and it is common, therefore, to see a maidservant carrying a camp stool or a little rug after her mistress, upon which the latter sits or kneels during the service. In the churches at Quito the floors are marked off like a chess board, and each square is numbered. These squares, about two by three feet in dimensions, are rented to rich people, and are occupied by the ladies of the family when they attend mass, so that at the morning service you will see little groups of one or two women scattered over the floor, while the poor are fringed about on either side against the walls.

In the cemeteries are great vaults of marble divided into

pigeon holes just large enough to receive a coffin. These are rented or purchased from the association or church to which the burial ground belongs, and when a body is placed in one of them the opening is sealed up with a slab of marble, upon which an epitaph is inscribed. If the rent is not paid after a certain time, the coffin is removed and buried in the back part of the cemetery, where the poor lie apart. Some families have individual vaults, and several in the cemetery at Guayaquil are beautiful works of marble.

There used to be a great deal more show of religion here in former days than now, for Guayaquil is getting to be very "liberal," which means that there is a growing indifference to religious observances. In the interior, especially at Quito, one sees a great deal of ceremony, and almost every day there are religious processions in the streets.

Some years ago, in Guayaquil, I saw a curious spectacle, which was familiar in those days. The priest of one of the churches needed money, so he took the image of the Virgin and the holy sacrament from the altar and carried them about the city under a canopy, clad in his sacerdotal vestments. He was preceded by a band and attended by a number of acolytes carrying lighted candles and swinging incense urns, and was followed by fifty or sixty men, women and children, who knelt in the streets in a reverential manner whenever he stopped. If the church was not rich enough to hire a band two or three men were sent ahead ringing bells to attract attention. When the procession stopped in front of a store the priests would enter with contribution plates and solicit offerings from the proprietors, clerks and customers, while the people kneeling outside prayed that their hearts might be touched with liberality. Where money was obtained a blessing was bestowed. These processions are now prohibited in Guayaquil.

Passing along the country roads in the interior travelers see rudely painted inscriptions over the entrances to houses like this: "La patrona de esta casa es Nuestra Señora de la Merced" (the patron of this house is Our Mother of Mercies), or "El patron de esta casa es San Juan de Baptista."

Everybody has his patron saint, to whom he offers prayers and who protects him from evil. Every boy or girl is christened after the saint whose anniversary occurs on the day of the child's birth. Sometimes very pious people give their children the names of several saints, so that they will be well looked after. A boy who is born Christmas week is usually named after the Savior, and the number of those who are called Jesus is very large. But the children never heard of Santa Claus and never sang a carol, and never saw a Christmas tree, for Christmas day is not celebrated in Ecuador as it is with us and in northern Europe. The only difference from ordinary days is that the morning mass is attended with a little more ceremony than usual. New Year's day and Easter are the popular festivals, and carnival week is observed as in Rome, only more rudely. On New Year's eve it is customary to have family gatherings, to which intimate friends are invited, to watch the old year out and see the new year in, with music and dancing, and when the cathedral clock strikes twelve everybody embraces everybody else, with affectionate words of congratulation and wishes for a "Feliz ano nuevo." Gifts are exchanged among members of the family, intimate friends and servants, and cards are sent to people whose names are on my lady's visiting list. The carnival lasts three days, the lord of misrule is supreme and the roughest kind of horseplay is indulged in. From behind the jealousies of the best houses the ladies do not hesitate to throw water and flour upon passers-by, whether they are friends or strangers. Rank and distinction are disregarded, and unless those whose business takes them out of doors walk in the middle of the street they are apt to be drenched.

"Cascarones" (wax balls filled with colored water) are thrown into people's faces. Syringes are carried under the coats of the men and are used without regard to results. Eggshells are filled with flour instead of confetti, and every conceivable mixture, including paint, mud and grease. It is considered proper to knock off a man's hat and kick it into the street; hence people wear old clothes when they go out during the carnival.

The saints in whose honor a baby is christened, like god-fathers and godmothers, are expected to look after his temporal as well as his spiritual welfare. I once knew a man whose name was Jesus Maria Joseph Saint-John-the-Baptist Trinity Velasco. He was a dwarf in stature with a very small body, a very large head, and a face that Shakespeare might have described for Caliban. He made charcoal in the mountains and owned a pack of donkeys that brought the product of his labor to market.

He and his sons—there were eight of them, by actual count, and three or four girls by way of variety—lived with his wife and mother in a little adobe dwelling of two rooms, not half so large as ordinary bedrooms, on the mountain side, seven thousand feet above the sea. The big boys cut the cedar and pine in the forests, and brought the sticks on their backs to the furnaces which the old man tended with much skill. And the fires were never extinguished; for while the father slept one of the sons looked after them.

About twice a week the donkeys were loaded with bags of charcoal and driven to the city by the younger children, little urchins from eight to twelve years old. They had to start at three o'clock in the morning and did not get home again until midnight, for the journey was long and the donkey is not a rapid traveler. Neither father, nor mother, nor any of the children, ever saw the inside of a schoolhouse, and would not have recognized their own names had they been written before their eyes. They seldom stopped work except upon a feast day, but the old man had two thousand silver pesos, about \$1,000 of our money—his savings—hidden somewhere about the place. So the saints were good to him.

If anybody supposes that the inhabitants of Ecuador are uncouth, unmannerly and uneducated, however, it is a great mistake. There is a wide difference between the peons, the Indians, and what are known as the upper classes. The latter number only about 15 per cent of the entire population, and are quite up to our standard of intelligence; and although education is not so universal as in the United States the families of the upper class are as cultivated as our own. They

even surpass the average citizens of North America in social graces, in conversational powers and linguistic accomplishments. They have keener perceptions than we; they are more careful of their manners, more observing of the nicer proprieties, usually speak fluently one or two languages beside their own, and have a cultivated taste for music and the arts. No Spanish lady or gentleman is ever embarrassed; they always know how to do and say the proper thing, and while in many cases their sympathetic interest in your welfare may be only skin deep, and their affectionate phrases insincere, they are nevertheless the most hospitable of hosts and the most charming of companions.

In commerce, as well as in society, this deportment is universal. In their stores and offices they are as polite as in their parlors. In the country no laborer ever passes a lady without raising his hat. Every gentleman is respectfully saluted, whether he is a stranger or an acquaintance, and it is pleasing to hear a market woman say, "May the Virgin prosper you," or "May heaven smile upon your errand," or "May your patron saint protect you from all harm." She may not care a straw whether you ever reach the end of your journey, and if you ask her how far it is to the next place she will probably tell you a polite falsehood by making the distance half as long as it is; but she recognizes an obligation and practices the beautiful custom of the country when she says, "God be with you," as if she intended it for a blessing.

The most novel and amusing spectacle in Guayaquil is donkeys wearing pantalets. This is not due to motives of modesty, such as were attributed to the Boston lady who clothed the limbs of her piano in a similar manner, for most of the children go naked and many of the peon women nearly so. The pantalets, made of cotton cloth and suspended by strips of tape over the shoulders and haunches, are a humane invention to protect the animals from the vicious flies which attack them.

When the railway to Quito is built Guayaquil will be an important market. The people of the interior consume a small amount of foreign merchandise at present because there

are no means of transportation. Every package and every passenger that goes to Quito has to climb over the Andes on the back of a mule. It takes a traveler from six to nine days to make the journey of 350 miles, according to the condition of the roads, and even then he will find it very tiresome and have to put up with a great many discomforts. He must carry his own bedding and food, for there are no hotels on the way, and the only shelter is the meanest kind of tambos, or adobe huts, which have thatched roofs, mud floors and not only filthy but full of unspeakable vermin.

Reaching the town of Ambato the traveler has the convenience of a stagecoach the rest of the way, over a very rough road, which is more convenient but more uncomfortable than horseback riding. By using relays of horses the coaches keep going night and day until the journey ends, and a passenger whose flesh and muscles have not been hardened to such experiences will find himself a mass of pulp upon his arrival at the Ecuadorian capital.

What little freight goes up and down the mountains is transported by caravans of mules and donkeys, which can carry no package heavier than 100 pounds. The mules can carry 200 pounds, but the load must be divided into two parts and slung over the saddle on either side.

There is very little in the interior for export. All the cacao is grown on the lowlands along the sea. There are some coffee plantations on the foothills of the mountains and a few hides and a little corn come out of the great basin, the latter being used for fodder at Guayaquil and at other places along the coast. The only articles that go into the interior are such as the people cannot produce for themselves, drugs and medicines, paper and stationery, hardware, cotton and woolen goods, perfumery, wines and liquors, toys, gloves, etc. Most of the clothing, boots and shoes, and other articles for personal wear and household use, are made in the country, and they are of the rudest sort. The people are poor and produce only enough to supply their own wants, chiefly because there is not market for a surplus. When the railroad is built—and the prospects seem favorable—an enormous area of agricultural

and pastoral lands will be opened to settlement and there will be some inducement for the farmers to extend their present plantations.

The foreign commerce of Ecuador is limited and varies from \$15,000,000 to \$20,000,000 annually, according to the volume and value of the cacao crop, which is its principal staple. The average will be about \$16,000,000 for the last ten years. There has usually been a balance of trade against the country, which has been settled by money borrowed abroad. A considerable part of the foreign trade has been conducted on the credit system. Mercantile houses in Guayaquil have been "carried" by their creditors in Europe.

It is difficult to state with any accuracy the amount of merchandise imported into the country, because the statistics of the custom house, for reasons that need not be explained, have been inaccurate and incomplete. The imports, however, have averaged \$8,000,000 and the exports \$7,000,000 in gold. The principal article of export is chocolate, or the cacao bean from which it is made, and at least one-third of the entire crop is sent to France, Belgium, Holland, Switzerland, Germany, England, the United States, Italy, Austria and Turkey receiving the balance in the order named. Considerable coffee is raised in the interior, which is absorbed by Chile and Peru. The rubber goes to the United States. The cinchona goes to Great Britain, with other dye woods and indigo. The hides and goatskins are sent to the United States. The tobacco and fruits go to Chile. Germany takes the vegetable ivory and considerable sarsaparilla. One of the most important exports is straw hats, which are sent north and south to all towns along the west coast, to Cuba and the other islands of the West Indies. The province of Manabi produces \$800,000 worth a year.

These are the familiar "Panama" hats which were never made at Panama, but acquired the name because that city has been the chief market for their sale in years past. Guayaquil now has that honor.

The town of Atacames, in northern Ecuador, where a large part of these hats come from, was the first place at which

Pizarro and his army landed en route to the conquest of Peru. The inhabitants are a unique race. In 1623 a vessel loaded with 700 African slaves was on its way from Panama to the mines of Peru, when the negroes mutinied, murdered their masters and the officers and sailors of the ship, landed at Atacames, took possession of the town, massacred every man in the neighborhood, took the women for wives and became the founders of an intelligent, industrious and enterprising community, which still almost exclusively occupies that province. They are called "zombargoes," and are a mixture of pure African and Cayapa Indians, who had reached a high stage of civilization before the invasion. The negroes and their descendants have minded their own business and kept within their own territory. Rumors of their fiendish disposition spread up and down the coast, and doubtless served as a protection, because the Spaniards and the natives both kept away from them, and they were not molested, but engaged in mining and agriculture. Their tobacco is particularly good, equal to the "vuelta abajo" of Cuba, and, as I have said, the women are famous as hatmakers.

Another place for Panama hats of the finest quality is Jijipapa, in the province of Manabi, which takes its name from a peculiar grass, of which the softest and silkiest hats are made. We never see them in the United States. The finest ones are taken by planters along the coast, who are willing to pay \$80 and \$100 for hats so soft and pliable that they can be folded up and carried in the pocket. The finest hat ever made was sent to the Prince of Wales some years ago, and it was so light and delicate that it could be folded into a package no larger than his watch. Some of these fine hats go to Paris; others to Italy and Spain. It takes a long time and great skill to weave a fine hat, and the work can be done only by moonlight. The fibers must not be exposed to the daylight, which would dry and harden them and destroy the flexibility so essential to their beauty. Nor must they be exposed to the light of a lamp or candle, because that would endanger them from the insects that are attracted by light. It requires the dampness of atmosphere that comes

after sunset to soften the fibers. The coarser hats, such as you see in the market, are woven under water, the hands of the women who weave them, as well as the material, being immersed in tubs and buckets. Bridles, halters, cigarette cases and other articles are made of the same material.

Great Britain and France share about equally in the imports of Ecuador. Germany's share is about 14 per cent, which is increasing more rapidly than that of any other nation, at the expense of England and France. The United States has about 10 per cent of the import trade. Great Britain furnishes cotton goods and other clothing, hardware, machinery, tools, cutlery, crockery, drugs and other manufactured articles. France furnishes silks and other fine classes of fabrics, hats and caps, millinery, gloves, hosiery, underclothing, boots and shoes, perfumery, stationery, jewelry, toys, fancy articles, furniture, wines and liquors and similar merchandise. Germany sends articles similar to those imported from England.

The exports from the United States to Ecuador in 1888 amounted to \$813,535. In 1898 they amounted to \$855,193, so, as will be noticed, there was very little change during the ten years, although in 1896 the total dropped below \$690,000, and in 1891 it exceeded \$900,000.

Our imports from Ecuador have stood about the same way. In 1889 they amounted to \$695,205. In 1898 they were \$765,590. In 1893 they ran as high as \$960,228. In 1897 they fell as low as \$566,526. The imports consist chiefly of hides and skins, rubber and cacao.

The detailed statistics of our exports to Ecuador show an almost infinite variety, the largest items being as follows:

Breadstuffs	\$122,250
Lard	142,077
Timber and lumber	113,648
Iron and steel	51,606
Tools	30,911
Oil petroleum	30,840
Cotton goods	53,253
Drugs and medicines	32,250
Cordage	15,964

Preserved fish	6,210
Furniture	6,443
Agricultural implements	744
Railway and street cars	11,650
Bicycles	2,112
Jewelry	7,310
Sewing machines	21,005
Paper	13,484
Electrical apparatus	16,927
Builders' Hardware	16,691
Machinery	33,868
Typewriters	1,434
Locomotives	2,000
India Rubber goods	3,842
Printing presses	1,817
Matches	3,389
Perfumery	9,329
Bacon and hams	6,193
Butter	3,581
Soap	1,586
Whisky	787
Beer	1,586
Wines	5,346

In addition to the items above given I find in the list small invoices of dental supplies, glassware, babbitt metal, stove polish, paint, plated ware, photographic materials, soap, confectionery, toys, clocks, trunks, gunpowder, boots and shoes, firearms, safes, saws, scales, stoves and similar articles.

There ought to be a much larger trade, particularly with California, in lumber, flour, wines, dried and canned fruits and similar articles, and there will be a fine opportunity for its increase as the British and Chilean Steamship Companies, which now send their vessels every two weeks to Guatemala, expect to extend the service so far as San Francisco as soon as several new vessels, which are now in the stocks in the British shipyards, are ready for use. Before that date, however, the California people should send drummers down there to make the acquaintance of the merchants and introduce their goods.

You seldom see a commercial traveler from the United States in these countries. Nearly all the merchandise bought

in the United States is ordered through the commission houses to which the hides and cacao are sold and the latter articles are paid for in that way instead of in cash. For that reason our exports and imports run about even every year. But if we would increase the trade we have got to go at it as the Germans are doing; we have got to cultivate the people and show them that it is for their advantage to buy of us instead of elsewhere. The Chileans have already eaten into the California market for lumber and flour, and are sending up a great deal of wine. Formerly we had a monopoly of the flour trade on this coast. Now we have only a small fraction of it.

We are always talking about building up commerce with Central and South America and "promoting more friendly relations," but all recent legislation has been to prevent the very thing our merchants and manufacturers most desire. During the Harrison administration we negotiated reciprocity treaties with nearly all the other American republics and colonies, in which they gave us and we gave them valuable concessions, and the effect was only just beginning to be felt when a change of administration took place and the democratic majority in congress revoked these treaties by a clause in the tariff act of 1894.

We slapped our friends in the face and told them that we did not want their trade. We did not observe the ordinary formalities used in diplomatic negotiation. We gave them no notice, offered no explanation, made no apology, but simply revoked the treaties peremptorily, without considering their interests or feelings for a moment. Then, three years later, came the Dingley tariff law, which contains a bogus reciprocity clause, intended to humbug the people of both continents.

I receive many inquiries from young men who want to go to South America to engage in business, and ask where they will find the largest chances of success. There is no use in any man going to a strange country to better his condition unless he can speak the language of that country, which, in the case of all the other American republics, is Spanish. A young man who should go to Venezuela or Ecuador or the Argentine Republic in search of employment without being

able to speak the Spanish language would be as helpless as a Spaniard who came to the United States without being able to speak the English language, and even if he had capital and desired to make investments on his own account he would be entirely at the mercy of his interpreters.

The ignorance of our merchants and commercial travelers on this point is one of the greatest obstacles to an increase of trade. In order successfully to compete with salesmen from Europe it is necessary for our drummers to meet the customers they are seeking in social as well as in business circles; to entertain and be entertained, and to make themselves as agreeable as possible. What sane manufacturer or wholesale merchant would send out a drummer in this country that could not speak English? Who would send a drummer to France who could not speak French and expect him to sell goods there? What European would send to this country an agent that could not talk our language? Such a thing would be considered a waste of time and effort; yet you seldom find an American commercial traveler in South America who can speak Spanish. I met a dozen or more representing various manufacturing and commercial interests, and all but one were entirely dependent upon interpreters to translate their conversation. If they had not been so keen-witted they would not have accomplished anything, but they could have sold a hundred times as many goods if they could have talked to their customers directly.

Now that we have added so much Spanish territory and so many Spanish-speaking people to our national domain, we ought to teach our children to converse with them in their language, as well as their children to converse with us in our language. English may be at some time the universal language, but not until every man who is now speaking it is dead and gone. Spanish is the easiest of all languages to learn, particularly to those who have a knowledge of Latin, and by steady application a young man ought to be able to hold an ordinary conversation in six months.

German commercial travelers are able to sell more goods in South America than those of any other country because

they have a larger stock of patience and understand the character of the people with whom they have to deal. When an English or an American drummer reaches a town he goes around among the retail dealers, greets them cordially, pays a few compliments, inquires after their families and mutual friends and discusses other subjects of similar interest for a few moments. Then he asks if they want any goods in his line, and unless they happen to be out of some staple for which there is an active demand they reply in the negative. He offers to show his samples and invites them to call upon him at the hotel or the club where he makes his headquarters. Then he goes on to the next shop, where the scene is repeated, and he may take several limited orders.

When a German drummer comes to town he wanders into a retail establishment in an indifferent manner, pokes over the goods, inquires where they got this and what they paid for that, and if there are no customers to be served, he offers the merchant a cigar and sits down for a sociable chat, which usually ends with an invitation to lunch or dine at the club, where he arranges an attractive spread and provides a copious supply of good wines, which is returned by an invitation to dine at the merchant's house. Not a word is said about business at either place. It is merely a friendly exchange of hospitality, which a perfect knowledge of the Spanish language enables the German drummer to make the most of. Not only one merchant, but all the tradesmen whose business is profitable, are cultivated in this way, and they meet the diplomatic drummer in the presence of each other at the club-rooms and residences of each other without the slightest restraint.

Sooner or later the curiosity of the merchant impels him to ask the drummer's business, and is told that he is selling a certain line of goods which are probably of no particular interest to him. This stimulates curiosity without satisfying it, and by his own volition, without any urging or even invitation from the drummer, within a few days he is examining the samples and giving large orders for goods. Meantime the drummer maintains an outward indifference, but puts the

merchant under obligations to him by social attentions and appropriate presents to the members of his family. They are friends and cronies rather than salesman and customers, and when the drummer leaves town every merchant of importance will accompany him to the steamer and toast his health and happiness and his early return with a bottle of champagne.

In several long journeys in South America I have always noticed that when a German commercial traveler comes aboard a departing steamer he is invariably accompanied by a group of friends, but English and American drummers never have any one to see them off except their fellow countrymen.

VI

THE PRESIDENT AND GOVERNMENT OF ECUADOR

Elroy Afaro is the first "liberal" president Ecuador ever had. No country has been so devoted to the catholic church or has been so thoroughly under the control of the priesthood. No government, not even Spain, has been so loyal to the holy father. The educated portion of the population outside of Guayaquil has been ultramontane to the extreme and sustained the president and re-elected the congress which declared in the constitution that the nation existed "for the glory of God and the holy catholic church." Bills introduced in congress begin with the phrase: "In the name of God, the author and legislator of the earth." The constitution declares that "the religion of the country is the Roman catholic apostolic. The political powers are bound to respect it and cause it to be respected, to protect its liberties and enforce its rights."

When a president is inaugurated he takes an oath on the four gospels to faithfully preserve and protect the church and to promote its interests. The papal nuncio, the personal representative of the pope at Quito, has always been the most influential personage in the republic. The archbishop has sat in the cabinet. A crucifix has stood upon the desks of the president of the senate and the speaker of the house of representatives, and before a member of either body engages in debate he is expected to make the sign of the cross in recognition of its presence and then address the presiding officer. For many years congress has appropriated \$25,000 annually as a gift to the pope, and no matter what was the condition of the treasury it has always been promptly paid. During the war between the temporal and the spiritual powers of Italy congress passed a resolution and sent an ambassador to invite

the pope to make his permanent home in Ecuador, just as the loyal people of Barbados offered the hospitality of that little island to George III., if Napoleon drove him out of England.

Garcia Moreno, who was president or dictator from 1861 till he was assassinated in 1875, placed the bleeding heart of Jesus as a coat of arms upon the banner of Ecuador, as Mexico has a cactus and an eagle, as China a dragon and Japan a sun. He called his bodyguard "The Holy Lancers of the Blessed Virgin" and formed his army into "The Division of the Mother of God," "The Division of the Son of God," "The Division of the Holy Ghost" and "The Division of the Body and the Blood of Christ."

He suppressed all secular newspapers and periodicals outside the city of Guayaquil. He forbade the importation of secular books and made Jesuit priests inspectors in the custom house. He placed all schools, universities, libraries, museums, hospitals, asylums and other public institutions under the control of the church and imported from Spain and Italy a large number of monks to act as teachers and managers.

This was acceptable to the people of the interior, but was exceedingly unpopular in Guayaquil and other cities on the coast, which pay most of the taxes, and where the people travel abroad and come in contact with strangers from other countries. They had an opportunity to compare the conditions of Ecuador with those existing in foreign lands, and, claiming that progress could not be made as rapidly as long as priests and monks controlled affairs, began to grow restless. The newspapers took up the discussion, and it was a common topic of debate in the clubs and market places. The successors of Moreno continued his policy, and finally a pretext for a remonstrance occurred in the city of Guayaquil when the catholic bishop excommunicated from the church three judges of the Supreme Court who rendered a decision contrary to his ideas.

A public meeting of merchants, lawyers and all the leading citizens was called to protest and marched in a body to the bishop's residence. The latter, who was protected by a military guard, claimed to believe that this assemblage of business

men was a mob that meant violence and ordered the soldiers to fire. Several of the foremost citizens of Guayaquil fell on the plaza.

Their bodies were taken home amid intense excitement, the guard at the bishop's palace was strengthened, the street was filled with soldiers and the city was placed under martial law. Instead of expressing regret at his mistake, the bishop cursed the souls of the dead, forbade the churches to be used for their funerals and prohibited their burial in consecrated ground. Notwithstanding this edict, on the day appointed, the bodies of the dead were carried to the plaza, the doors of the cathedral, which had been barred, were broken down, and the Rev. Dr. Calderon, a priest of brilliant attainments and liberal views, volunteered to celebrate a requiem mass, which was followed by speeches from several prominent citizens protesting against the despotism of the governor and demanding that the bishop should be indicted and tried for murder.

A procession was then formed, which included 90 per cent of the population of the city, the coffins of the dead were carried on their shoulders to the cemetery, which, having been locked, was violently entered, and the usual catholic service was read over the graves by Dr. Calderon.

Fearing the indignation of the public, President Camaaño hurried the bishop on board a little gunboat and carried him to a place of safety, and it was well that he did, for upon their return from the cemetery the people broke into the prelate's palace, destroyed his furniture and would have hung him. On the following day the newspapers of Guayaquil, without exception, demanded the prosecution of the bishop to vindicate the honor of catholicism, and declared that there could be no peace in the country unless he was punished. A petition was sent to the archbishop at Quito, who banished the offender to a retreat in the mountains and placed in charge of the diocese of Guayaquil a wise and prudent man, who succeeded in suppressing the excitement and prevented a revolution. But the incident caused the formation of a liberal party, which was organized for the express purpose of resisting the power of the priesthood and separating the church from the state.

President Flores, who was a wise and able man, was shortly afterward elected to office and used his best endeavors to conciliate the liberal element, which hitherto had taken little part in politics.

Up to that time one-tenth of the gross products of the country was paid to the church in kind, according to the Mosaic law. Every peasant took to the priest of his parish one-tenth of all the beans and corn he raised, and the big haciendados or planters gave the financial representative of the bishop one quintal of cocoa for every nine they sent to market. President Flores had this law repealed and substituted for it a tax of three-tenths of one per cent upon the appraised valuation of all real and personal property in the republic for the benefit of the church. He intended to conciliate public sentiment, but produced the contrary result, and the hostility of the priesthood became more and more pronounced. The peasants were relieved of the tithes, but the entire burden fell upon the landowners and business men, who refused to be taxed to support priests. The plea that the proceeds were devoted to sustaining schools, hospitals and asylums, which was largely true, was not accepted. The people refused to pay the tax; the liberal party grew rapidly in numbers and strength. The newspapers of Guayaquil, which were the only ones published in Ecuador, openly attacked the government for the first time. Professional men and merchants and other people of property and education renewed their activity in politics to awaken public sentiment in favor of a change of policy.

In the meantime a man named Elroy Alfaro, who was expelled for conspiracy against the government, had been appearing and reappearing in different parts of the country at the head of unsuccessful revolutionary movements. For several months he controlled the provinces along the sea coast, but had been driven out again and again and had taken refuge in Panama or Peru to renew his efforts as often as he could secure men and money. It was believed that Alfaro was receiving assistance from business men in Guayaquil, although he had no open support there. President Camaaño,

who had been the most successful in preserving order since the assassination of Gen. Moreno, was re-elected.

With a firm hand he suppressed the discontent that was growing throughout the country and restored order, until he was himself compelled to fly to escape public indignation that was aroused by a little incident of an unusual character. He acted as a go-between in the sale by Chile of the cruiser *Esmarelda* to the government of Japan during its war with China in 1895. General Camaña received a liberal commission, variously reported from \$50,000 to \$250,000, but put the money in his own pocket, and when the people of Ecuador learned the facts they rose in fury and he had to flee. He went to Spain and has since been living in Barcelona. Ex-President Flores, his brother-in-law, and others of his friends were also sent into exile, and, taking advantage of the confusion and excitement, Elroy Alfaro, who had been hovering around like a stormy petrel, seized the government and proclaimed himself dictator.

The following year he held an election and was declared "constitutional president." Alfaro at once proclaimed a liberal policy and a dissolution of the relations between the church and state, which culminated in October, 1898, by the passage of a law abolishing the tax for the support of the church, forbidding interference in political affairs by priests and bishops, depriving the archbishop of his seat in the cabinet and cutting off all the perquisites from the government that had been enjoyed by the clergy. The constitution was not amended, nor was religion made free by law, but by practice, and in 1896, for the first time in the history of Ecuador, protestant missionaries were admitted to the country and permitted to hold public worship and establish schools.

These missionaries have met with difficulties and interference from the priests and the people, but have been tolerated if not encouraged by the government. They have been given to understand that they will be permitted to establish schools and churches and conduct religious services wherever they choose to do so without interfering with official affairs or the rights of others, and it is expected at the next meeting of

congress a law will be passed granting freedom of worship in Ecuador to all religious denominations.

The marriage law, however, has not yet been amended. No protestant clergyman is allowed to perform the ceremony, and under the existing statutes no marriage is lawful unless sanctioned by a catholic priest. Children born after protestant marriages are considered illegitimate, and cannot inherit property, but it is expected that this will all be changed if Alfaro remains in power and the civil right of marriage established.

Alfaro claims to be a good catholic, but holds that the church should attend exclusively to the spiritual welfare of the people, as in the United States, and let politics alone.

It was not to be expected that the priests would allow themselves to be deprived of the power and perquisites which they had enjoyed so long without a protest or resistance, and they have attempted several revolutions, which were feeble and unsuccessful. Alfaro was very lenient with them in comparison with the previous customs of the country, and endeavored to pursue a conciliatory policy to reconcile the clergy to the new order of things. He expelled the bishop of Guayaquil and Bishop Shoemaker, of Manabi, a German Jesuit, who organized a revolution, and a large number of priests who were detected in conspiracy, but his orders of banishment have been directed at individuals rather than orders, and only against priests and monks of foreign birth, and no one has been tortured or shot for treason, which is an unusual record for this country. The liberal element think he is too lenient, for the people are not accustomed to such mercy and may mistake it for cowardice. A large number of priests and monks have left the country, however, both from fear and from lack of support. Some have gone to Colombia and Peru, where they are welcome and await with hope an opportunity to return to Ecuador. Some have gone to the United States—there is a large colony of exiles in Brooklyn and another in Baltimore—and more have gone to Europe. They are mostly monks of the various orders. It is said, however, that many priests have remained and are collecting what they can from their parishes. Their former stipends are entirely cut off.

They now have to depend upon voluntary contributions, and the people outside of Guayaquil are very poor. The church owned an enormous amount of property, consisting of both city real estate and productive plantations. The latter belonged chiefly to the monastic orders, and were worked under the direction of the monks, who retained the proceeds for the benefit of their own brotherhoods. The income of the church proper is insufficient to support the large priesthood. There is a catholic church for every 150 inhabitants, and a few years ago 10 per cent of the entire population was either priests, monks or nuns.

When President Alfaro cut off the subsidy which the government of Ecuador had been giving to the church the priests closed the schools and left the entire country without any means of education except a few private institutions. Until then the entire educational system of Ecuador was under control of the priests, and the parochial schools offered a meager opportunity for the children in the cities and villages to obtain the rudiments of learning. They were taught to read and write and the simple rules of arithmetic, but gave more time to the study of the catechism and the lives of the saints than to secular text-books. The attendance was comparatively limited; not one child out of ten in the towns and villages attended even the parish schools, and those in the rural districts had no facilities whatever. Therefore about 75 per cent of the population of Ecuador is absolutely illiterate.

The priests explained to the people that suspension of the schools was due to the parsimony and the indifference of the new president and the liberal party. In consequence a violent hostility was aroused against the liberal government, which was not prepared to supply a school system upon such short notice. A few months later, however, Alfaro retaliated by securing the passage of an act by congress confiscating to the state all church property and placing the mines, the cocoa and sugar plantations and much valuable real estate in the cities under the management of a board of trustees appointed by him, the proceeds to be applied to the support of free schools. This act excited the greatest degree of indignation

among the sympathizers of the church, and the clergy attempted to incite another revolution.

The Franciscan, Dominican, Capuchins and other monastic orders owned nearly one-third of the entire productive property of the republic, and hence were the principal sufferers. While the law was pending they made haste to convey the titles of much of their property to local laymen for fictitious considerations, but the government has refused to recognize the validity of these transfers.

If the estates confiscated from the church could be managed honestly for the benefit of the schools, the children of Ecuador would have a heritage as rich as those enjoyed by the present generation in Kansas, Colorado and other of our western states and territories, where a wise congress dedicated a large portion of the public domain to the aid of learning.

In the summer of 1899 President Alfaro entered into a contract with the Rev. Dr. Wood, who was in charge of the methodist missions in Peru, to organize a school system for Ecuador, and the work is now in progress under the direction of protestant teachers.

President Elroy Alfaro was born of mixed Indian and Spanish ancestry in the town of Monte Christi, in the province of Manabi, in the year 1833, so that he is now sixty-seven years old. That province has been distinguished for producing an independent and combative race of men who have given the government a great deal of trouble. Law and order have not always prevailed there; quarrels are usually settled by force, and people who have suffered injury are accustomed to apply the remedy with their own hands instead of appealing to the courts. Nearly all of the professional revolutionists in Ecuador have come from that section, and Alfaro has not lacked the provincial traits. After having served ten years in the army, he began his career as a revolutionist as long ago as 1865, when he organized a movement for the overthrow of General Garcia-Moreno, the ablest and most despotic dictator Ecuador has ever known. Alfaro ambushed Gen. Salazar and a small force of soldiers in one of the forests of Manabi, and took them prisoners, but the General managed to escape,

and, having joined his main forces, made a prompt attack upon the rebels and captured Alfaro, who was banished from the country as a disturber of the peace.

He obtained employment in Panama, where he remained for ten years, accumulating considerable money, and enjoying an intimate acquaintance with another political exile from Ecuador of an entirely different character,—Juan Montvalo, the founder of the Liberal party in that republic. His literary works rank high in Spanish literature and are even better known in Europe than in his own country, where he gained his chief fame as a leader of the revolutionary party and the anti-church element of the population.

Alfaro sat at the feet of Montvalo for ten years and absorbed his political ideas so that, in 1876, when an attempt was made by the republicans of Ecuador to overthrow the dictator Veintemilla, he reappeared in his native province and raised a regiment for the revolutionary army. The movement, however, was unsuccessful. Alfaro was captured and lay for a year in a filthy prison in Guayaquil, where he nearly died of dysentery. Through the intercession of friends he was released on parole and again banished. For three years he remained quietly in Panama, but made a third attempt at revolution in 1880, which also failed and he was once more a fugitive. In 1882 and 1883 he inaugurated other revolutions that were more successful and resulted in the overthrow of Veintemilla. He proclaimed himself dictator and it was expected that he would be given the presidency, but the Camaaño-Flores faction were better politicians and succeeded in seizing the civil power. Alfaro remained in command of the army for a few months, but finding that he could make no progress he resigned, retired from the country, and in the following year organized another revolution against his former allies.

He seized the steamer Alajuela and cruised down the coast from port to port towards Guayaquil. The government sent a man-of-war after him and the two ships fought a battle in the darkness a few miles off the coast. The Alajuela caught fire and her crew leaped into the water to save themselves.

An Irish-American by the name of Power, whose acquaintance Alfaro had made at Panama, took charge of his leader, persuaded him to crawl into a barrel and, being a powerful swimmer, pushed the barrel ashore. As Alfaro could not swim a stroke he considers that he owes his life to Power, and has given evidences of his gratitude on frequent occasions. Power now has command of the Navy of Ecuador, which consists of two small gun-boats, and is considered the most influential man with the administration in the entire republic.

Having landed on the beach, Alfaro and Power were compelled to hide in the jungle to escape capture, and made their way over a mountain trail for 200 miles into the republic of Colombia. They were not allowed to remain there, however, and took the first opportunity to sail for Nicaragua, where they obtained commissions in the army. They served under President Bonilla in Honduras, also until 1895, when another revolutionary movement broke out in Ecuador and they returned to participate in it. Alfaro soon obtained the command of the revolutionary forces, overthrew the government, declared himself dictator, and, in 1896, was elected constitutional president.

In appearance President Alfaro is a short, stout gentleman, with a cordial, yet grave and confident manner. His eyes, hair and complexion testify to his Indian origin.

Among other commendable efforts on the part of President Alfaro to redeem Ecuador was the passage of an act by the congress in 1899, placing the currency on a gold standard after the expiration of two years, the latter condition being allowed in order to give an opportunity to withdraw and redeem an uncertain amount and great variety of money now in circulation. The new law was written by Martin Reinberg, United States vice-consul, and a committee composed of bankers and merchants in Guayaquil, to whose judgment the matter was referred by the president, and it was the subject of long and earnest reflection. Ecuador has been a so-called bimetallic country, but practically monometallic. There has been no gold in circulation, and none has been coined for many years. There is considerable silver, but more paper, which is nom-

inally redeemable in silver, and was issued by the banks of Guayaquil. The standard of value has been a "sucre," which contains as many grains of silver as the Peruvian "sol," and is divided into decimal fractions. The paper currency was issued in \$1, \$5 and \$10 notes, printed on paper of poor quality, which easily wears out, so that the banks derive a considerable profit from its destruction. There are no banks outside of Guayaquil. Some of them, however, have agencies in other cities. Exchange has often fluctuated as much as from 40 per cent to 60 per cent within a few months, and during recent years, owing to the excess of imports, it was frequently impossible to obtain drafts on New York or London. This, of course, was a decided embarrassment to all foreigners traveling or living in the country.

The new law adopts a bimetallic ratio of 30 6-10 to 1. The gold condor, which is to have the same value as the English pound sterling and be worth \$4.85 in American gold, will become the standard of value in January, 1901, and ten silver "sucres," now worth about 48 cents each, will be equal to a gold condor. A limited amount of paper can be issued by the banks for the convenience of commerce, but must be redeemable at the option of the holder in gold. The silver "sucres" are also redeemable in gold to the amount of \$5, and its multiples. Exchange was arbitrarily fixed by an agreement between the banks and the leading merchants at \$1.08 and \$1.10, and was maintained at that rate. The business men adjusted themselves to the situation without difficulty, and as Guayaquil is the only commercial city in the country the few merchants who control the capital there are able to carry out any policy they may decide upon.

VII

THE ZONA SECA OF SOUTH AMERICA

Frederick E. Church, the famous artist, asserted that the grandest of mountain scenery may be found in Ecuador, and that there is nothing elsewhere so imposing, so sublime, as the group of volcanic peaks that lie between Quito and the sea, where he painted his wonderful picture, "The Heart of the Andes." Nowhere are wilder freaks in geological formation; nowhere more startling contrasts. Within human vision are twenty volcanoes covered with everlasting snow and over fifty peaks higher than Mont Blanc. Three of the volcanoes are active, five are slumbering and the remainder are extinct. The mountains of Asia may surpass the Andes in altitude, but there is no such group of monsters in so limited an area elsewhere in the world.

A sea of foothills with the vapor hovering over them like sleep upon a drowsy child stands in the foreground beyond the jungles of the coast, and growing bolder and bolder, more and more rugged, rises in irregular terraces which the Spaniards call "sierras," because their uneven summits resemble the teeth of a saw. Behind and over them the volcanoes lift their untrodden and unapproachable summits with stately grandeur, with snows that have lain for ages and still defy the tropical sun. Some of the peaks are irregular, some are grotesque in outline, and the imaginative minds of the natives have fancied resemblances to various other works of nature. Some are calmly, grandly regular, and the even snow upon their crests seems edged with gold when it catches the reflection of the sun, or is often a rainbow of colors—violet, crimson, purple and orange.

Cotopaxi is the loftiest of active volcanoes, but has been slumbering for nearly forty years. The only evidence of

internal activity is the constant rumbling, which can often be heard and felt one hundred miles away, and frequently a thin cloud of smoke is seen creeping from the crater and dissolving into the thin air. Edward Whymper, the English scientist, climbed to the summit of Chimborazo ten or twelve years ago, but no one has ever reached the top of Cotopaxi. Many have attempted it, but the walls are so steep and the snow is so deep that ascent is impossible.

On the breast of Cotopaxi is a great rock, more than 2,000 feet high, which the natives have named "The Inca's Head." That unreliable old story-teller called tradition says that it was once the summit of the volcano, and fell on the day when the Spaniards strangled Atahualpa, the last of the Inca emperors.

The last great eruption of Cotopaxi was in 1859. It was followed by a severe earthquake, which caused great destruction and loss of life in the surrounding towns and villages. In 1868 the volcano Tunguragua, one of the largest of the group, and over 17,000 feet high, became very much excited, and discharged immense masses of lava and ashes simultaneous with a terrestrial convulsion which extended along the entire south Pacific coast. It was then that the tidal wave came into Arica that lifted the United States man-of-war Wateree over the roofs of the houses and landed it with a straight heel in a sandy plateau about half a mile from the ocean, where it still remains.

When you leave the Guayas River in Ecuador to go southward you strike the Zona Seca, the desert coast, almost as soon as you pass the boundary of Peru. The steamer follows the coast line as closely as safety will allow, and the passengers are almost continually in sight of scenery that is both imposing and repulsive. It bears a close resemblance to that of the great plateau of Arizona. The western chain of the Andes, or the Cordilleras de la Costa, as they are called in the Spanish geographies, run parallel to the ocean, with a strip of desert about thirty miles wide lying between. The surf has pounded away upon it until the soft places in the clay cliffs, which rise from the water, sometimes to the height of 300 and 400 feet, have

yielded, and present an outline similar to the wind-carved cliffs on the great American desert. Occasionally a rocky promontory which has resisted the water, extends into the sea, gray with guano dropped by the millions of water birds that make their homes along the wave-worn and forbidding shore.

The mountains are black, barren and rugged, and rise in ranges like soldiers on parade, the smaller in the front rank, the taller in the rear, and often reach the snow line, which in this equatorial latitude is about 15,000 feet above tidewater. The mountains appear gloomy, mysterious and forbidding from a distance, and I suppose they would be even more disagreeable upon intimate acquaintance, if one may speak in that familiar way of such monsters of omnipotence. Their aspect is constantly changing. In the morning they are half hidden by heavy banks of clouds, from which their steel-tinted peaks emerge, as if the Titans were too tall for the curtains that nature hangs before them. At noonday they show clear, sharp silhouettes against the azure sky, and later in the day, when the sun is about to be swallowed by the ocean, they take on a robe of purple that becomes them best.

The desert is covered with shifting sands, and just north of the port of Eten, where many of the finest Panama hats are made, the roofless walls of the original village are pointed out, which was partially buried twenty years ago. The church and several large adobe houses are still standing, but it took so much labor to shovel the sand out of the streets and houses every day, that the people moved four miles to the southward and started a new town in the shelter of a bluff 640 feet high. There is a railroad there which runs to the town of Chicalayo, a little oasis in the desert, where a stream has the courage to come out of the mountains and irrigate large fields of sugar and rice. An iron mole at Eten extends about 1,000 feet into the sea, beyond the heavy rollers, but it is impossible for a steamer to reach it, and all the passengers and cargo that come and go are hoisted up and down by cranes that are run with steam. The passengers, for safety, are locked into iron cages which are suddenly hoisted from the pier, swung around

into the air and then dropped into the lighters at an opportune moment as a wave passes by.

Near by Eten is the village of Santa Rosa, which is unique and famous as being the only place in Peru where the original Chimu language is spoken, and where the Indians have preserved their ancient customs and protected their race from adulteration with the Spaniards. They have accepted the catholic religion, but it is strangely mixed with the peculiar customs which the people have inherited.

A great deal of water comes down from the mountains, caused by the melting snows and the rains that fall in the interior, but it is swallowed by the thirsty desert before it can reach the sea. Back toward the foothills, before the streams disappear in the sand, there is considerable agricultural activity, and shiploads of produce are sent north and south to less favored regions by the steamers that ply this coast.

The geologists say that the highest peaks of these mountains were once submerged in the sea, and are the result of upheaval and the accumulation of sediment from the subsiding waters. They were subjected not only to water, but also to intense heat and acid vapors which changed the feldspar into sulphates of alumina and iron and into chlorides and iodides and all sorts of minerals with long names which have made Peru the richest territory on earth, although the greater part of the deposits are inaccessible without railway transportation. The desert is rich in petroleum, sulphur, salt, nitrates, gypsum, magnesia and borax. The foothills conceal an abundance of silver, gold, copper, lead, coal, iron and nickel, and far in the interior are found emeralds, rubies, turquoise and even diamonds—the jewels with which the Incas adorned their persons—but the region is so inhospitable that man cannot exist there.

The first place of importance is Paita, a collection of mud huts, which has considerable commerce because it is the port of Piura, the second city in Peru, the center of a rich agricultural district and a sanitarium, with which it is connected by a railway. But all the climates on the face of the earth are found in the Andes, caused by the modifying influences of

elevation. The montana, as they call it, which slopes off to the east from the summits of the range, has a dense growth of timber and a rich soil when cleared; the puna, a great plain between the two ranges of the Andes, is a dreary and cheerless region, too high and cold to support mankind without severe labor. The sierra, as the foothills are called, possesses a charming climate and an atmosphere that is as pure as air can be, where rain seldom falls and where there is nothing to corrupt the original plan of nature.

Like the arid lands of Arizona and southern California, the desert coast of Peru is rich in vegetable life whenever it can be moistened. The dry sand is filled with the germs of plants, fruits and flowers, which in some remote cycle and under entirely different atmospheric conditions flourished and ripened. Sometimes, about once a generation, a shower escapes from the mountains and is poured over the sands. The hitherto lifeless earth springs immediately into being. In 1892, upon the desert between Piata and Piura there fell a series of unprecedented rains. Within a few days the surface of the earth was alive with sprouting plants and afterward with brilliant flowers, many of which were unknown to botanists. Vegetables and melons grew in profusion and furnished abundant food to the wondering inhabitants, who regarded it as a miracle. Even a heavy fog sometimes brings out the vegetation and causes the undigested seeds dropped by the mule trains to sprout and root and grow to sufficient height to feed the animals.

Twenty years ago an enterprising Chinaman built an inn midway between Paita and Piura. All his supplies were brought from the latter place, and even his water was transported seven leagues on the cars. It occurred to him to drive a well, and a short distance below the surface he found an abundance of water, with which he irrigated a little garden and raised vegetables and fruits that were the wonder of the coast. These lands were supposed to be the property of the state, and no mortal ever claimed ownership to them until one day a man appeared to demand the surrender of the half acre of garden which the Chinaman had made a blessing to all

that region. A reference to the records showed that the claimant had inherited from his ancestors a grant from the Spanish crown which made him the owner of a certain area "along the River Chuyra, and then toward the orient as far as goats would go without water."

On the top of the hill above the town of Paita is a big cross which was erected many generations ago by a pious priest to frighten the devil away from the town, but from the reputation of some of the inhabitants the precaution was not successful. Fronting the custom house in the main street, near the end of the pier, is the Church of St. Merced, which shelters a most remarkable image of wood. According to the story told there, about 200 years ago Lord Anson, an English admiral, attacked the town, drove all the people into the church and locked the doors, while his sailors sacked the houses. After they had secured all the plunder they could find they turned the inhabitants into the street and destroyed the interior of the temple so far as they were able. They tipped the images from the altar and hacked them with their swords, and when one sacrilegious ruffian struck a wooden effigy of the Virgin across the neck with his cutlass blood flowed freely from the wound. And ever since, on the anniversary of that sacrilege, the wound bleeds anew. The image performs many miracles. A drop of blood is a cure for every ill to whomsoever makes a liberal offering, but the United States consul told us that few people believe in the story now.

On either side of the entrance to the church is an enormous shell which contains holy water. They are said to be the largest shells in the world, being about three feet long and two feet wide, and are said to have been presented to the church by some grateful sailor who was saved from shipwreck by appealing for the intervention of the Virgin of Paita during a typhoon among the islands of the South Sea.

The altar is covered with votive offerings and bedecked with masses of artificial flowers. The image of the Virgin is clothed in a robe of white satin embroidered heavily with silver. Among other votive offerings which have been placed upon the altar by devotees who have enjoyed the succor of

the Virgin, is a painted ship carrying at its masthead the flag of the United States, showing that some grateful Yankee skipper was saved from shipwreck by her miraculous powers.

Piura is a famous sanitarium and is visited by invalids from all along the coast of Chile and Peru. Nervous diseases, consumption, bronchitis and other ailments of the lungs and throat are said to be cured within a few months, and even the dead in that rare atmosphere escape the ordinary process of putrefaction. It is said that an open coffin containing the body of a dead priest lay for several years in the open cemetery.

During the civil war in the United States, when cotton commanded high prices, an enterprising Yankee, living in that section, introduced its cultivation on the plains around Piura, with great success. The Incas raised immense quantities of the staple in that locality and at other places along the coast before the conquest, and with it made their garments. A considerable quantity is still raised and shipped to Europe, where it is used for the adulteration of silks and wool. It is not planted annually, like the cotton of the United States, but the same plants bear for several years in succession and yield a continuous crop. The seed has been taken to other regions, where it was supposed the soil offered similar advantages, but every attempt to raise the peculiar Piura cotton has been a failure.

The natural color of the fiber is a light brown, and it cannot be bleached. The natives use it, as the Incas did, for weaving ponchos and other garments. It never fades. The bodies of mummies which have lain in the ground for several centuries wrapped in cloth made from this fiber are often exhumed, and the cerements when exposed to the air recover their brilliancy of color. The shipments of cotton from Paita amount to about the value of \$1,200,000 a year.

The petroleum interest of Peru, which is very large, although still undeveloped, centers at Tumbes, on the northern frontier, where Pizarro landed with his expedition for the conquest of Peru after leaving the island of Puno. There was a palace of the Incas, and there the Spaniards first beheld the opulence and civilization of their empire. Pizarro explored

the country without interruption, cultivated the good will of the natives, and attached to himself two young men, who were instructed in Spanish, so as to serve as interpreters. After remaining at Tumbez for several months he returned to Panama and from there went to Spain to report and place his plans before the emperor. He asked for a force of 250 men, with arms and ammunition, which he agreed to pay for, and also promised that the king should have all the territory he should conquer and one-fifth of the treasure he found. It is an interesting historical fact that Cortez, who had recently returned from the conquest of Mexico, furnished Pizarro the funds to fit out his expedition, and that Fernando de Soto, who afterward discovered the Mississippi River, was second in command.

The Spaniards discovered the oil shortly after their arrival and used it for lubricating purposes, as the natives had done before them, but no attempt was made to bore wells until about thirty years ago, when a Pennsylvania prospector named Larkin and his associates came down here and explored the country. They satisfied themselves of the extent and quality of the deposits and asked from the government an exclusive concession for refining and selling oil in Peru. They demanded a complete monopoly and overreached themselves. The government was willing to give them an exclusive right to refine for a certain term of years and place a heavy duty upon imported oil, but would not prohibit importations nor give a perpetual monopoly.

Several attempts were afterward made to interest the Standard Oil Company, which sent men from New York to make an investigation, but for some reason that great octopus did not utilize the opportunity that was offered and the oil wells were idle until about twelve years ago, when an English company erected refineries and has since been producing a limited quantity. Other companies followed the example and tank steamers were built to transport the oil up and down the coast, where the total absence of wood and the high price of coal give the fuel question great importance. To aid the companies the government imposed a heavy duty upon North

American petroleum and the local product is now selling for about 18 cents a gallon. The locomotives on several of the railroads were equipped with oil burners and for a time used that kind of fuel, but for some reason or other they soon abandoned them, and prefer to pay all the way from \$10 to \$15 a ton for coal rather than use oil. I have not been able to ascertain the reason. The oil of Tumbes, however, is still burned in several manufacturing establishments in the neighborhood of Lima.

So far as exploration has gone the petroleum beds cover an area of 16,000 square miles, and as the neighboring country is of precisely the same geological character it is assumed that the field is practically unlimited. The wells are from 200 to 500 feet deep and very little water is found. The crude oil differs essentially from that of Pennsylvania in the absence of paraffin, and can be exposed to a very low temperature without becoming solidified. The analysis is similar to that of the oil of Russia.

About \$4,000,000 has already been invested in refineries and other plants and in a line of tank steamers, but for some reason the industry does not flourish, is not considered profitable, and several of the refineries are idle.

As I have suggested, the fuel problem is a serious one along this coast. There is no coal mined between Coronel, a town about 400 miles south of Valparaiso, Chile, and Puget Sound. The Chile coal is a medium quality of bituminous, and is used by most of the steamers, selling for \$6 and \$7 a ton. The mines are on the bluffs that overhang the ocean, so that it is easily handled. Overhead railways have been constructed from the tunnels to the end of piers so that buckets of coal filled in the mines can be dumped into the vessels automatically. The English steamship company prefers to bring its coal from Cardiff in sailing vessels around Cape Horn, and stores it in old hulks in Panama and Callao. The Pacific Mail steamers on the west coast of Mexico and Central America bring their coal in the same way from Baltimore and Newport News, while their supply at San Francisco comes from British Columbia.

There is, no doubt, a vast quantity of coal in the Peruvian mountains. Outcroppings appear at frequent intervals for several hundred miles, but they lie a considerable distance inland, across the desert and west of the first range of sierras, which makes the deposits inaccessible and useless without the construction of expensive railways.

A company was formed in the United States to develop a large deposit of anthracite coal about 120 miles northeast of Pacasmayo, and Mr. G. Clinton Gardner, formerly a division superintendent on the Pennsylvania Railroad, is in charge of the enterprise. The railway by the nearest route will not be less than 112 miles long, and must cross the mountains at an altitude of 12,000 feet, which will make construction very expensive, although there are said to be no serious engineering difficulties. The government of Peru is willing to lend its credit, which is not first-class, and give a nominal subsidy; but as near as I can find out the difficulty lies in the lack of a safe and convenient port on the ocean.

Pacasmayo has no harbor. Ships have to anchor in an open roadstead with a dangerous bottom and a heavy surf, which is sometimes so high that they are unable to land either cargo or passengers. A substantial steel pier has been extended about three-quarters of a mile into the ocean, with a line of railway upon it, and connects with a road that runs into the interior for twenty-five or thirty miles. Formerly the cars upon this pier were moved by sail power. Pacasmayo has the benefit of what sailors call a "soldiers' wind," which always blows from the same direction, and generally stiff enough to furnish motive power to move a heavily loaded car, but that novel method has been abandoned and a little switch engine now does the work.

Passengers and freight are hoisted up and down from and to immense lighters by steam cranes, but it would be difficult and expensive to handle coal in that way. The only good port on this part of the coast is at Chimbote, a hundred miles or more to the southward. That has a land-locked harbor, with plenty of water, and it would be easy and inexpensive to construct docks with chutes by which the coal could be trans-

ferred directly from the cars to the steamer; but the distance from Chimbote to the mines is nearly twice as far as from Pacasmayo, and the railway would cost twice as much. It is argued, however, that the difference in the cost of handling coal would more than pay the interest upon the money necessary to build the longer line.

Another important feature in the fuel problem on the west coast of South America which must be considered in connection with all coal mining investments, is the fact that the large fleets of sailing vessels which carry nitrates from the coast of Chile to the ports of Great Britain and Continental Europe, find coal the most convenient and profitable return cargo, and often bring it from Cardiff and Hamburg around Cape Horn to Iquiqui and Antafogasta for five shillings or one dollar and twenty-five cents a ton, when no other freight is offered. At other times it is brought as ballast and sold on commission for whatever it brings over the market price in Europe. Several hundred of the finest sailing ships in the world are engaged in this traffic under the British, French, German and Norwegian flags, and their consignees control the coal market. By pooling their interests they are able to keep up the price and make a large profit, so that any mine that may be opened is at their mercy. Some years ago the Standard Oil Company almost ruined the petroleum producers in Peru by underselling them. The sailing ships which carried nitrate of soda to the United States were loaded with refined petroleum at New York, Baltimore and Norfolk and brought it to the ports of Chile and Peru as ballast, where it was sold for just enough to cover its original cost and the duty. The refiners of Peru cannot produce the same grade of oil and cannot sell even the poor quality that they do make at such low prices without losing money, hence for a time they were deprived of the greater part of their market and several of the refineries were compelled to shut down.

Not long ago, up in the mountains north of Pacasmayo, near the town of Cajamarca, the pious people burned an old woman for a witch. They had suffered from various plagues individually and collectively, and in seeking for a cause

accused a poor old Indian hag of witchcraft. The village padre was consulted, and by his advice she was burned at the stake, as was formerly done to such persons in New England. But the imitator of the Rev. Cotton Mather, of Salem, Mass., was arrested, convicted, stripped of his sacerdotal robes and sentenced for life to the penitentiary in Lima, where he is now employed in manufacturing harness. It occurred to me that the people of our southern States might find a moral in this little incident.

Witchcraft is generally believed in among the Indians, and at nearly every town along this coast of Peru you will find crosses erected at conspicuous places, which are expected to frighten the devil away, just as the Chinese place screens in front of the entrances to their houses to keep out evil spirits, but the people are ignorant Indians. Not one out of one hundred can read or write.

The Island of San Lorenzo, one of the largest upon the whole western coast of South America, which protects the harbor of Callao, is a modern improvement. It was not there when the Spaniards came, but was born October 28, 1746, when the natives believe it rose from the bottom of the sea as a monument to commemorate an earthquake which took place on that occasion and destroyed the city of Callao. The geologists, however, assert that this story is preposterous because the island shows signs of greater age, is composed of the same rock as that upon which the town is resting, contains the same fossils, is covered with the same soil as the adjacent shore and belongs to an older period than the middle of the last century. They admit that the earthquake may have separated the island from the mainland, and the topographical appearance confirms such a theory, but that the great barren pile of rocks came into existence as Venus did they positively deny. It is, nevertheless, a pretty legend.

One Lorenzo Villalta, a humble fisherman, was setting his nets in the bay on the night of October 27, 1746, when he was interrupted by a prodigious commotion on the inside of the earth. He was frightened into a swoon and when he awoke found himself on the top of a mountain entirely surrounded by

water. He could see the shore line clearly, but it looked strange to him, and the city of Callao had disappeared. With difficulty he made his way down to the water and swam to the mainland, where he found that the town had been entirely destroyed by an earthquake and a tidal wave, and that 5,000 persons had perished. To-day at low tide the submerged walls of the old city can be seen through the clear water where the Yankee cruiser Newark is anchored, and because of the extraordinary experience of Lorenzo Villalta the island was christened in honor of his patron saint.

Earthquakes are frequent at Lima. A *tremblor*—that is, a gentle shaking of the earth—occurs every few days, but the houses are built to endure it, and the people do not give such things much attention; but when the windows rattle and the pictures swing like the pendulum of a clock, and the flagstaff on the roof describes an arc in the sky, it means that a tier-ramotor is in operation, and the inhabitants run out into the street as soon as possible and commence to say their prayers. Little destruction has been caused by earthquakes for many years, but nature is very uncertain. In the mysterious mountains all sorts of things are going on and there is no telling what capers they may indulge in.

The castle of San Felipe in the harbor of Callao is famous because the Spanish flag waved from its battlements for the last time on the continent of America. It was the ultimate refuge of Spanish authority on this continent, and the governor of Peru, with a garrison, was beleaguered there for eleven months by the armies of the patriots during the war for independence. They did not surrender until they had eaten all their old boots and shoes, made soup of the rats and mice and other animals that infested the place, and three-fourths of them had died of starvation and exhaustion.

In the harbor the historic line-of-battle ship *Naiad*, with a high poop and hanging deck, which fought with the fleet of Nelson at Trafalgar, was until a short time ago condemned to the humble duty of a storehouse for coal, old anchors, chains and cordage for the British fleet on this coast, but has recently been broken up, and canes are now being made of its timbers.

A curious phenomenon is often observed at Callao. Very frequently sailors awaken in the morning to find the woodwork and iron of the ships covered with a brownish moisture that looks like dew, and unless it is rubbed off immediately it will stain old paint permanently. It does not stick to new paint and may be wiped off at any time within a few hours. This is called "the Callao painter," and the phenomenon has never been satisfactorily explained. Nor is it to be found in any other port in the world. One theory is that fumes of sulphuric acid or some other acid are forced up through the water from the bottom of the harbor during the night, and that seems to be reasonable, but no discolored dew is noticed on land, and when it is falling it is not perceptible to persons aboard the ship; nor does it affect the health of the sailors in any way. It simply adds to their labor and injures their morals because it compels them to do a lot of extra scrubbing and to buy a quantity of extra paint. It is especially trying to men-of-war, and they avoid Callao harbor for that reason.

The old city of Callao has been the scene of many exciting events. A hundred and fifty years ago an earthquake and a tidal wave entirely changed the topography of that part of the coast, destroyed 5,000 lives, and left the original city under the bed of the bay, where vessels now anchor. In 1866 during the war between Spain and the republics on this coast, a Spanish fleet bombarded Callao, but was driven off with a terrible loss. In the war with Chile it was blockaded for nearly a year, and some curious incidents occurred.

One day, while the blockading squadron of Chile lay off the port, a small coasting boat came drifting out of the harbor. It was filled with fresh vegetables and there appeared to be no one on board. From all the vessels of the fleet boats were at once lowered, and there was a lively scramble to secure the prize, for the seamen had been living for months on short rations of beans and pork and canned stuff, and the luscious-looking vegetables sharpened their appetites. After a good deal of pulling and hauling and swearing a boat's crew from the man-of-war *Loa* secured possession of the coaster,

and the officer in command generously promised to send some of its contents to its rivals, but never did.

The prize was hauled alongside of the *Loa* and its cargo transferred to the deck of that vessel. The last thing in the bottom was a bag of potatoes, and when that was lifted an explosion occurred that made all the vessels in the harbor tremble and sent the *Loa* to the bottom with all on board. Captain Paul Boynton, the famous swimmer, who was then in Callao, had rigged a powerful torpedo in the bottom of the boat, so arranged that it would explode when that bag of potatoes was lifted. How well this scheme succeeded the navy of Chile knows.

But even this disastrous experience did not teach the Chilanos caution, for a few weeks afterward the same trick was repeated with almost as great success. Torpedoes were rigged in the air chambers of a life-boat, which was handsomely painted and sent adrift. It was soon picked up by the *Corodanja*, a Chilano cruiser, and, after being carefully examined, was declared to be all right; but as soon as the tackle from the davits was hitched on and the seamen began to haul the prize on board the torpedoes exploded, killed several men and made a great hole in the side of the man-of-war. The same Yankee that rigged up the vegetable boat prepared this trap, and when the Chilanos captured Peru they hunted high and low for him, but he had escaped, with the aid of one of the captains of a Pacific Steam Navigation Company's steamers, in woman's garments.

The same fleet was gulled again in a very clever way by Captain Petrie, in the employ of the Pacific Steam Navigation Company. One morning his vessel appeared in the harbor of Callao with the yellow-fever flag, so well known on that coast, at her masthead, and the union jack at halfmast, with the ensign down, as a signal of distress. The blockading officers at once challenged her and the captain explained that several of his officers and engineers, the doctor, and more than half of the crew were down with yellow fever.

"Then get out of here," answered the blockade commander.

"I can't go," was the reply. "I have very little coal, no one to run the engines, and there are not well hands enough on board to make sail."

"What do you want?"

I want a doctor and some medicine and permission to anchor somewhere here."

"You can't anchor here," was the reply.

"Then let me go to Callao."

The blockading officers held a consultation and finally concluded that it would be a good campaign maneuver to send yellow fever into Callao, so the English captain was permitted to pass the blockade. It was afterward discovered that the vessel was loaded to her gunwales with arms and ammunition and had no sickness whatever on board. The captain was dismissed from the service of the Pacific Steam Navigation Company on the demand of the government of Chile, as soon as the deception was discovered, and now commands a vessel plying between London and Calcutta.

There is a statue in the little plaza in front of the custom house in Callao, in honor of Admiral Grau, a native of Piura, who was the hero of the war between Chile and Peru, but was altogether too humane to suit the temper of the Spanish race. During the earlier part of the war the army of Chile was concentrated at the port of Antefogasta, down on the desert coast, where all the fresh water available for 100 miles or more is produced by the condensation of water pumped up from the sea. The inhabitants of the city, numbering 8,000 or 10,000, and the army of Chile, comprising about 18,000 men, were entirely dependent upon the condensing factory, which stood near the beach, when Admiral Grau entered the harbor with the Peruvian cruiser Huascar.

Two Chilean gunboats, which had been sent there to support the army, immediately ran away, and Grau demanded the surrender of the city and the military forces. When his demand was refused he repeated it with a warning that unless his terms were accepted he would destroy the condensing works and leave them without water. The Chileans replied that he dare not commit so inhuman an act and leave 25,000

or 30,000 people to die of thirst. They were familiar with his generous and humane disposition and judged him well; because, after thinking the situation over, he left the Chilano army unharmed at Antefogasta, pursued the two gunboats which had run away and sunk them 100 miles up the coast.

The destruction of the Esmeralda was memorable. She was a corvette of about 1,600 tons, commanded by Captain Arthur Prat. Getting the Esmeralda into close quarters, and her captain refusing to surrender, Admiral Grau struck her with his ram and stove a hole in her side. Still Prat refused to surrender, and again Grau rammed her, cutting the vessel nearly in two. As she struck, Captain Prat saw that his vessel (the Esmeralda) must go down, and, calling upon his men to follow him, leaped upon the deck of the Huascar, with his sword in one hand and his revolver in the other. The two vessels were disengaged so quickly and the crew of the Esmeralda were so demoralized by the shock, that only one man, a seaman, followed the intrepid Prat on board the enemy. The latter ran amuck along the deck of the Huascar, discharging his revolver into the groups of men, who stood paralyzed by his audacity, and when his pistol was empty he rushed madly upon them with his sword.

Admiral Grau sprang from the pilot house, and, with the true spirit of a soldier cried out: "Surrender, Captain Prat, surrender! You are alone, and we do not want to take the life of so brave a soldier!" But Prat, crazed with excitement, attacked the gunners with his sword and was shot down. As he fell his sword was thrown from his hand, and, the point piercing the deck, the weapon stood upright as if purposely so placed. There it remains on the Huascar to-day, having never been removed. Admiral Grau, in his admiration for the bravery of his enemy, had a box built around it, and since the vessel has been in the possession of the Chileans, who soon afterward captured her, a glass case has been substituted.

Not only did Grau thus recognize the courage of his adversary, but he carefully gathered up everything he could find of the belongings of the captain and sent them to his widow in Chile, with a noble letter, in which he said:

"Captain Prat died a victim to his own excessive intrepidity, in defense of and for the glory of his country. I sincerely deplore his fate, and in expressing my sympathy wish also to declare my admiration for his character and courage."

The Chilanos had an opportunity to write a similar letter to Admiral Grau's widow a few weeks later, for his language regarding Prat's death would well describe his own. The Huascar was the swiftest vessel on the coast. She was not as large and powerful as some of the ironclads of Chile, but was easily handled, and Grau was a skillful seaman. He attempted with his little vessel to fight the whole fleet of Chile, and the battle which ended his life and resulted in the capture of the Huascar was one of the fiercest known in the annals of marine warfare. The odds were six to one, and the Huascar might have escaped capture, but a shell was dropped into a temporary roofless conning tower, where Admiral Grau was directing her movements, and, exploding, blew him to atoms. The explosion disabled the steering gear, and although the vessel was helpless, her crew fought until all the officers but one lieutenant were killed or wounded. Then she surrendered and now belongs to Chile.

Captain Carvajal, the second in rank, was badly wounded, and for many months his life was despaired of, but he finally recovered and is now living in Lima on the retired list and serving as president of the National Geographical Society. Carlos Cisneros is the secretary of that institution.

Having secured the Huascar and killed the only good naval commander the Peruvians had, the Chilanos at once blockaded the ports of Peru and invaded her territory with a powerful army.

Admiral Grau was severely censured for not insisting upon the surrender of the Chilano army at Antefogasta, and he might have taken advantage of the situation to make terms of peace, but he gave his life in defense of Peru, and nearly all the glory that nation won in the war was gained by his victories. After he died the fortunes of the Peruvians seemed to change and they suffered nothing but disaster.

VIII

THE CITY OF THE THREE KINGS

At one time Lima was the most prominent and populous city in America, and it was the seat of Spanish power on the southern continent for more than three centuries. At first the treasures that were stripped from the temples and palaces of the Incas gave the Spaniards enormous wealth without labor. The number of millions of dollars in silver and gold and precious stones that were found in the hands of the innocent aborigines is a question of discussion, but nowhere else in the world was so large a fund of portable booty ever captured. Before that was exhausted the Spaniards discovered the mines from which it originally came, and duplicated their wealth with little more labor. From 1630 to 1824, according to the records, the valley of Cerro de Paco alone produced 27,200 tons of pure silver under the direction of the Jesuits, while other mines in the same neighborhood yielded hundreds of millions of dollars, even with the primitive system of working that was applied to them by the monks and the native Indians. Then, after the mineral period of Peruvian opulence was passed, the discovery of guano gave another source of riches that was even more productive for two or three generations. Then came the war, and the devastation by foreign invaders and the havoc of domestic revolutions left to Lima only the shadow of her former splendor. For nearly twenty years the country was depressed and the people suffered almost beyond precedent. Industry was almost entirely suspended, commerce was reduced to a mere trifle compared with previous records, and the proud inhabitants lived for several years upon the pawnshops.

A few years of peace have almost restored the appearance of the city and offer most encouraging prospects for the

future. The devastations of the war have been entirely obliterated, the roofless houses have been rebuilt, and those that were damaged are repaired and repainted. There is an air of freshness and prosperity that is gratifying. The shops are filled with attractive goods and their counters are lined with purchasers. Caravans of carts are passing back and forth in the streets. Everybody seems to be employed in useful occupations, and the faces of the populace, like the walls of their houses, wear a pleasant expression. Recovery has come slowly and after long suffering, and it is all the more acceptable and appreciated.

Pizarro selected the location for Lima, and founded the city January 6, 1535, and, as that was the anniversary of the manifestation of the Savior to the Magi, he called it the City of the Kings. Philip II designed a coat of arms for the infant capital—a star upon an azure field over three golden crowns. The churches, convents and monasteries of Lima were the finest and most costly in America, and the records show that \$90,000,000 was invested in such means of grace by the early authorities. Several of the most imposing churches and two or three monasteries have been preserved, but the greater number have been destroyed or are badly out of repair.

While most of the piety is shown by the women of the country, they are not allowed to enter churches with their bonnets on. It is the custom to wear a manta or mantilla to church, and worshipers who enter with a "gorra," as they call a bonnet in Spanish, even between the hours of service, are immediately ordered out by the sacristan or some of the other attendants. The respect usually paid to the members of the diplomatic corps does not exempt them from this rule, and the wife of an American minister, who was herself a catholic, before she learned that fact was turned out of two churches because she had a hat upon her head. It is quite as much out of place as if a man should wear his hat in a Chicago church. All visitors to the Peruvian churches, ladies as well as gentlemen, are compelled to uncover their heads as they enter the door.

We witnessed an interesting ceremony at the Cathedral,

when Irving Dempsey Dudley, Jr., the baby son of the United State minister to Peru, who was born on Dewey day, May 1, 1899, was christened, and received the benediction of the pope by the hands of Mgr. Gasparri, the papal nuncio. The nuncio also occupies the post of apostolic delegate to the catholic church in Peru. He is eminent in the hierarchy, is recognized for his ability, learning and diplomatic skill, and is popular in all classes of society at Lima. Mrs. Dudley is a catholic and preferred that her child should be baptized and educated in her religion.

It is not often that the great cathedral is used for such a purpose. This venerable building was erected by Pizarro, who laid the cornerstone in 1540, and for two or three centuries was not only considered the most magnificent ecclesiastical edifice in America, but was the recognized center of the church on the southern continent. Before its altar the viceroys were crowned; from the residence of the archbishop, which was formerly adjacent, many an edict has been prepared and issued of political as well as religious importance to the American people. Lima witnessed the last gasp of the inquisition, which was maintained here for a hundred years after it was suppressed in Spain, and its headquarters are now occupied by the senate of the republic. The ceiling of the old audience chamber in which the senate now meets is one of the most elaborate and exquisite pieces of wood carving in the world, and was carved by the monks of the mother country in 1560. The dungeons in which the heretics were confined and the rooms in which they were tortured are now used for the clerical force of the upper house of the Peruvian legislature. Between the cathedral and the inquisition a close relation existed, and the archbishop of Peru was for centuries the most influential prelate in America.

The remains of Pizarro, a rusty skeleton, lie in a glass case in one of the altars of the cathedral, and are shown to visitors who are willing to pay the requisite fee. They ought to have a conspicuous place, for he gave to the diocese \$9,000,000 in gold and silver that was stripped from the Inca temples.

Another of the stories told of the cathedral is that in 1661, when La Palata, the viceroy, rode from the palace on the other side of the plaza to its entrance, the wide street was paved with ingots of silver, the hoofs of his horse were shod with shoes of solid gold and its mane and tale were strung with pearls.

We went to the cathedral to pay our respects to the remains of Pizarro. They lie in a glass coffin, upon a red velvet cushion, edged with gold cord, and under the skull is a pillow incased in the same material. The flesh of the famous conquistador turned to dust several centuries ago, and his skin, which is the color of parchment, clings in loose folds to his naked bones, which have been "articulated" with wire by unskilled hands. The toes have disappeared, and the feet look as if they had been chopped off with a hatchet.

The expression on the countenance of the conqueror of Peru was anything but pleasing or peaceful, and in his valiant struggles he somewhere lost four of his teeth. His sword lies at his left side ready to be unsheathed when Gabriel sounds the assembly on the eventful morning. Between his legs is a brass tube, in which, the sexton told us, was the evidence of the authenticity of the skeleton. A glass jar beneath his feet contains what the priest said were his brains, and there was a rosary lying beside it, upon which he may have said his prayers—and no man ever needed to say them more than he. Considerable doubt is cast upon this skeleton because the skull bears no mark of the blow that killed Pizarro in 1541, but it may have had time to heal since then.

An American woman who visited Lima several years ago claims to have carried off one of Pizarro's toes, but the popular opinion among her fellow-countrymen here is that she was humbugged by the sexton, who will readily sell any part of Pizarro's person for an adequate sum of money, and draw on the nearest cemetery to fill the order.

In the little chapel where the remains lie is a large altar of solid silver that must have been very costly, and an image of the Virgin wearing a golden coronet which weighs several pounds. When the Chilean army was in Lima this altar was

whitewashed and thus escaped the fate of all the other precious decorations of the cathedral.

One of the curious social laws of the country forbids women to attend funerals, and they do not appear at weddings unless they are very intimate friends.

Peru is the birthplace of the potato, which was used as an article of food by the Incas and exported to Europe by the Spaniards when they took over quinine bark and named it in honor of the Countess of Chincon, whose husband at that time was viceroy. The Indians had used the bark for medicinal purposes as long as any one could remember, but this noble lady was the first European to test its efficacy, and it proved so excellent a cure for the malaria which saturates the atmosphere of Lima that she induced the Jesuit fathers to recommend it to the medicos of the old world. These wise old chaps sent it to Spain and Italy, and it is said that one of the first doses of quinine ever administered in Europe was swallowed by the pope.

The unregenerate potato, which is still found in a wild state among the mountains of Peru, is a delicate vine bearing a fruit about the size of a plum and as yellow as an orange. Cultivation has increased its size and improved its flavor.

The scientists say that the tomato also originated in Peru, and was known among the Incas as a love apple, possessing peculiar qualities that influenced the affections. For centuries after its discovery the same superstition prevailed in Europe.

Peru also claims to be the mother of cotton, but I think Egypt will dispute that fact.

About a hundred miles north of Lima, near the town of Huacho, is one of the great curiosities of nature—a salt factory on an automatic plan. When the tide comes in it fills a lot of shallow basins, and the water is prevented from flowing back into the sea by closing the gates. The atmosphere is so dry that the water evaporates rapidly and leaves a sediment of salt in an almost pure state, which is scraped up, packed into sacks and shipped to market. Within the coast a little further the percolation of sea water through the porous rocks into pits and hollows has caused immense deposits of salt to

accumulate. The salt is taken out in blocks six or eight inches square and sold in that form. As soon as the pit is excavated the water comes in again and in a year or two has solidified and is ready for the miner. Wells driven into the sand disclose strongly impregnated water at a depth of twenty-five feet, which seems to be a great deal heavier than the sea water, and is drawn off into vats for evaporation.

The population of Lima is uncertain, as there has been no accurate census taken for many years. The peons endeavor to avoid enumeration, because they are aware that the census lists furnish information for the conscript officers who are recruiting the army. But there is supposed to be a population of about 105,000, which is considerably less than that of twenty-five years ago. In 1800 there were 65,000 people in Lima, and about the time of the declaration of independence perhaps 5,000 more.

Lima was formerly surrounded by a high adobe wall, which has been almost entirely removed, and was entered by three gates, at which taxes were collected upon every article that passed in and out, and head money was required of travelers.

From the foundation of the city in 1535 to the abdication of the last viceroy in 1821, Peru had only forty-three rulers, which is an average of about one in every seven years. Since independence and the organization of the republic there have been sixty-six presidents and dictators and seven councils of state, which is an average of a little less than one a year. This indicates how uneasy is that head that wears the crown in a South American republic.

In the center of the plaza in Lima is a pretty bronze fountain that was erected in 1578, a gift from some noble Spaniard, and is probably the oldest fountain in America. The oldest bridge in America crosses the Rimac River back of the palace. It was probably erected about the same time, and was rebuilt in 1610.

In the Plaza de la Constitution is a statue of Bolivar, which represents the Washington of South America seated upon a rearing horse like Andrew Jackson in Lafayette Square at

Washington, but is much superior in design and execution. It was designed and cast by Cadolini at Munich.

Another beautiful monument of marble near the botanical gardens represents Columbus in the garb of a courtier of the fifteenth century in the act of presenting a cross to an Indian girl who drops an arrow, the symbol of savagery, at his feet.

When a burglar wants to break into a Peruvian house he takes a sponge and a bucket of water and moistens the walls, which are covered with only a thin coating of mud, and easily dissolve upon the application of moisture. Then when the mud is removed, he takes a sharp knife and cuts the strips of split bamboo, which serve as a substitute for lath. That easy little operation produces a hole in the wall large enough for a man to crawl through, and can be performed so silently that people sleeping in the house will not be awakened. Not long ago the residence of the cable manager at Barranca was entered in this way. The thieves frightened the family, but were discovered before they had seized much booty.

They put queer names on the signboards in Peru, evidently intended to appeal to the piety of the purchasing public. There is a little shop in the lower part of the town which the proprietor has christened the "Tienda of the Holy Spirit," and a crockery store on the main street bears the sign, "El Progreso de la Incarnacion"—the progress of the incarnation. A grocery is called "La Estrella de Belen"—the star of Bethlehem. A cantina or saloon near by is named "The Star of Destiny"; a millinery store, "The Lily of Delight"; while the dirtiest drinking place I saw in Peru—and none are clean—was called "The Cluster of Camelias."

All the native women wear the manta when they go upon the street. This is a black shawl folded around the face, over the head, across the breast and fastened in the back with a pin. This garment is said to have been inherited from the native Indian women as the poncho, the familiar blanket with a hole for the head cut in the middle, was first used by the Indian men. It is claimed that every woman in the great empire, which stretched almost from the Isthmus of Panama to the Straits of Magellan, abandoned colors and put on black mantas

as a badge of perpetual mourning when Atahualpa, "the last of the Incas," was strangled by the Spaniards in 1531. There is probably some truth in this story, for in the graves of the vast Inca cemeteries that have been destroyed by scientific investigation and vandalism no black garments are found. All the female mummies are wrapped in mantas of brilliant colors, which are worn and fastened exactly the same way as the present generation is accustomed to fasten them. It is rather singular, therefore, that the descendants of the conquistadores should imitate their victim and perpetuate the signs of the sorrow which the Indians were caused by their brutality and duplicity.

The native society is quite exclusive, and social laws are rigid, but a foreigner who goes to Lima with good letters of introduction will always be cordially received and admitted to the best circles. American naval officers are especially welcome, for Peruvian belles are quite as strongly attracted by the glitter of brass buttons as their sisters in the United States and Europe; but both the foreign colony and the natives have learned by experience that it is well to be shy of strangers until their antecedents are ascertained. Too many of our fellow-citizens go there because they have good reasons not to stay at home, and it isn't always safe to ask an American down in that country what name he bore in the States.

The social restrictions of ancient times are growing lax in Peru, as in other Latin-American countries, because of contact with foreigners at home and abroad, although the young women are not yet allowed so much freedom as their sisters in United States and England. It is still a breach of decorum for a lady to receive a gentleman alone until after her marriage. A young man may call upon his sweetheart, but must ask for her mother or her father. If they are at home it is proper for him to ask for the daughter also, and he is allowed to tell her of his love, but their interview must be in the presence of her mother, and when she has consented to accept his hand his father and her father make it up between them, and the match is announced; but no contract is required, as in France, and money marriages are infrequent, although of

course prudent parents look out for the welfare of their daughters with quite as much solicitude as in the United States.

The men of Peru insist that the women of Lima are the most beautiful in the world, and they are very attractive, whether you see them in their homes or clad in the black manta on the way to mass in the morning. They have wonderful eyes, and know how to use them. The manta is a square shawl of black China crape, two yards wide, and the amount of silk embroidery upon it indicates the wealth of the wearer. Although made in China, the manta is the national costume of Peru, and is worn by every woman, regardless of rank or wealth, whenever she appears on the street. The center of the fold is placed upon the forehead, where usually a bit of lace hangs down to the eyebrows. One end of the manta falls down in front of the dress as far as the knee. The other is thrown around the shoulders, drawn closely so as to show the outlines of the figure, and fastened in the middle of the back with a pin. The girls are slender, short of stature and of graceful form, but they lose their beauty of figure with maternity. They ripen early, reach the prime of beauty at 16 or 17, and at 25 begin to take on flesh, which is said to be due to their lack of exercise and the excessive use of sweetmeats.

The dentists say that the bad teeth of the women—and the men also, for that matter—in Peru are due to the quantity of sugar cane they eat while children, for there is an acid in the Peruvian cane which destroys the enamel of the teeth.

The people of Peru have many curious customs that have been handed down from generation to generation of their Spanish ancestors. They seem to cling to them more tenaciously than other South American countries. It is still the fashion here to have large families, and you frequently find ten, twelve and fifteen children of the same mother, whose grandchildren often take care of her own babies. An American resident of Peru whose wife was a native is said to be the father of twenty-eight children. I was introduced one morning to one man who has fourteen living children and has buried four.

I was refused admission to a funeral in one of the churches because I was wearing a business suit. The policeman

explained politely that my garments were not appropriate to a house of mourning. Funereal ceremonies are very elaborate. When a member of a household dies the windows and doors of the residence are all tightly closed or hung with black cloth. The pictures and the mirrors are turned to the wall or crape is thrown over them. The arms of the chairs are tied with bows of wide black ribbon; every bit of color and ornamentation is concealed, the piano is closed and a black ribbon is tied across the lid. Crape is hung in festoons from the chandeliers and other gas fixtures, and the vestibule is heavily draped in order that callers may understand without inquiring that the family are not receiving guests. Every member of the family—men, women and children, sisters, cousins and aunts sometimes two or three degrees removed—puts on black, withdraws from society and shows every outward semblance of sorrow for at least a year. The custom of wearing mourning upon the death of distant relatives is so common that many families are never out of crape, and nearly every other person you meet wears symbols of sorrow.

A widow is expected to pass the first thirty days of her bereavement in utter silence and secluded from the rest of her family. She goes to church in the morning to pray for the repose of the soul of her husband, and receives calls of condolence from her intimate friends in a darkened chamber. They remain only a moment in her presence, and, after embracing her and shedding a few tears, retire. A bereaved husband is not required to show so much grief, but it is not customary for him to return to his business until thirty days after the funeral, and for a year at least he is debarred from the club and other places of familiar association.

In the newspapers there is a column entitled "Defunciones," in which are announcements reading as follows (I take one at random from a morning's paper):

"The widow, sons, daughters, sons-in-law, daughters-in-law, brothers-in-law, grandchildren, nephews, nieces and cousins of him who was Dr. Fidel Manuel Carranza (Q. E. P. D.) supplicate that his late friends will be so gracious as to honor them by accompanying the remains from the late residence of the

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deceased, Calle Morcedes No. 150, to the general cemetery at 4 p. m. on the 28th day of July coming. This attention will be gratefully received by his heart-broken widow and his bereaved family."

Another notice in the same column includes political friends and supporters among those in whose name the invitation is issued.

These notices have been preceded by formal announcements of death, and, simultaneously with their publication, it is customary to send cards heavily bordered with black lines in a corresponding envelope by the hands of a servant dressed in deepest mourning to the residences of friends. These private announcements bear a heavy black cross instead of a crest or other appropriate insignia. Upon the receipt of such an invitation, etiquette requires that the person to whom it is addressed should pay a visit of condolence before the funeral. He will be received in a darkened parlor by one of the relatives, a son or a brother or a nephew, to whom he will express his sympathy and of whom he will inquire after the health and the welfare of the remainder of the family. The funeral is not attended by women, but the gentlemen friends of the family will appear in black garments, black gloves, silk hats and either black or white neckties—both are *en regle*.

They will find the coffin in the principal parlor covered with offerings of natural, artificial and metallic flowers. Wreaths made of tin are much favored. They are painted green or in imitation of dead leaves, and are, of course, imperishable. An altar with crucifix, candles and other paraphernalia for the service stands at one side of the room, but it is customary to have mass said in private in the presence of the widow and members of the family before the arrival of the invited guests. Each person leaves his card upon a tray which stands near the entrance or is held by a footman for that purpose. At the hour appointed the coffin is removed to an elaborate hearse, or catafalque, which is itself a monument of mourning, drawn by four and sometimes by six horses wearing heavy black nets or blankets of black velvet that reach almost to the ground and long streamers of crape attached to the bridles and other por-

tions of their harness. The top of the hearse is ornamented with long black plumes, while the wheels are concealed by a deep braided fringe. The driver and the footmen who attend the hearse are in black livery, and all the attendants of the undertaker are dressed in a similar manner.

At the cemetery it is customary for one of the friends to read a brief address of a biographical nature and pronounce a eulogy upon the virtues of the deceased. A copy of the manuscript is furnished to the family and another is sometimes placed inside the coffin in order that if the remains are ever disturbed it may be known that the dead was eminent for piety and faithful in friendship. Before the coffin is intrusted to the tomb the priest sprinkles it with holy water and reads the concluding words of the service.

After the ceremonies are concluded the eldest son or the nearest relative of the deceased stands at the gate of the cemetery and shakes hands with all the gentlemen present, expressing in appropriate terms the thanks of the family and in return receiving their condolences.

Before the close of the year of mourning a requiem mass is celebrated at the church which the family are in the habit of attending. A formal announcement is made in the newspapers, and cards of invitation are sent to friends and acquaintances similar to those issued at the time of the funeral. One morning, I attended a requiem mass celebrated for the Hon. Dr. Fidel Rodriguez Ramirez, a member of the chamber of deputies from the city of Caraz, in the northern part of the republic. As the expenses were paid by the government the ceremonies were of a more elaborate character than usual. A regiment of soldiers was drawn up in line upon the streets approaching the church, the members of the cabinet, the private secretary of the president and several aids-de-camp represented the chief magistrate of the nation, who would have been present personally if the dead man had been a senator instead of a deputy. A requiem mass was sung by the regular choir, re-enforced by the members of an opera company now under engagement here, and an orchestra of stringed instruments. The church was darkened by hanging black

cloth before all the windows, and the only light came from the candles on the altar. The members of the senate and the house of representatives appeared in what we call evening dress, although the ceremony was at 9:30 o'clock in the morning, wearing swallow-tail coats, low-cut waist coats and white ties, but black gloves. A large number of other gentlemen were present in official uniforms or black frock suits.

Similar arrangements are made for the requiem masses sung for the benefit of private individuals.

I know of no country where the minds of the people are so much engaged with their religious duties that the church bells are always ringing and processions of women draped in black mantas are continually passing to and from the church doors. There are seventy-six churches in Lima—one for an average of about 1,200 people.

Archbishop Tovar, who was elected to that diocese in 1899, is a young man of modern ideas and progressive tendencies, and with the advice and support of the papal nuncio he is endeavoring to abolish some of the most absurd of the ancient religious customs which are still observed here. He has forbidden the celebration of the feast of St. Peter, which was formerly held on June 29 with extraordinary proceedings.

Until 1899 the fishermen of Chorillos and other towns along the coast were in the habit of taking an image of St. Peter, who is the patron saint of fishermen, from the altar of his church and parading it through the streets with bands of music, processions of priests, military and fire companies, civil, social and charitable organizations, to the landing place at the foot of the bluff, and there transferring it to a handsomely decorated fishing boat. The priest in charge of the ceremony, the grand marshal of the procession and a committee of citizens got into the boat, which was then rowed around the bay while the priests sprinkled holy water upon the surface of the water. Having arrived at a certain place a hook and line were thrown overboard and the end placed in the hand of the image, the head fisherman, or the chairman of the committee, holding it behind the saint's back. When he felt a bite the line was drawn up through St. Peter's hands, and the

fish that was caught was accepted as indicating the character of the fishing harvest during the remainder of the year—the larger the fish the better luck ahead for those who are in the trade that St. Peter followed.

The saint was then rowed back to the shore, the procession was re-formed, and marched around the streets of the city to the church, where St. Peter was restored to his altar. In 1899, as I have said, the ceremony was forbidden throughout the entire republic of Peru by the archbishop, because he believes that such celebrations are injurious to the morals as well as a reflection upon the intelligence of his parishioners, many of whom actually believed that few fish would be caught that season because the waters were not blessed by St. Peter as usual.

Another reform inaugurated by Archbishop Tovar has been the suppression of street processions. It has been customary in years past, and as long as any one can remember, for "the saints to go visiting," to use the familiar phrase of the common people. On the anniversary of St. Dominic, for example, the monks and priests belonging to the order he founded were accustomed to take his image from the altar and form a procession of military companies, benevolent and religious societies, and with music and banners march around the city visiting various other churches, whose priests, having been notified in advance, would be ready to receive the saint, escort him to the altar and celebrate a special mass in his honor, while his followers occupied front seats in the sanctuary.

These processions occurred two or three times in a month, and were advocated and defended by the priests on the theory that they excited the attention and the interest of the people in religious affairs. But the archbishop has forbidden them, with the exception of two or three, which have been permitted until now, but I am told will not be allowed again. The archbishop has thought it prudent and politic not to abolish everything of the kind at once, but to do so gradually.

The most peculiar of these ceremonies, however, took place as usual in 1899. On a certain feast day the monks of the San Francisco monastery took the image of their saint and founder

from the altar of the great church, and the Dominican monks did the same with the effigy of their founder. Two processions were formed with brass bands, military companies and civil organizations as usual, and after parading through the principal streets they met in the main plaza in front of the cathedral, where the two saints exchanged greetings and addresses were delivered in their behalf by representatives of the respective monastic orders.

Formerly the archbishop appeared on this occasion in his richest ecclesiastical robes and conferred his blessing upon the assembled crowds, which were composed of the most intelligent and highly educated people of the city. But that class no longer recognizes the ceremony, and Archbishop Tovar ignored it. He intends to prohibit it entirely, and his policy will be to gradually eliminate from the diocese under his jurisdiction all these antiquated and absurd customs and reorganize the church in Peru upon the North American plan. This, however, is going to be a difficult task for the ambitious and progressive young man, because the ignorant classes are devoutly attached to what appear preposterous mummeries to the educated portion of the community.

In all parts of South America wooden crosses are still erected on the outskirts of the towns and villages to frighten away evil spirits. They are also erected along the highway where people have met with death by violence or accident, and pious travelers are expected to say a prayer for the repose of the dead as they pass.

You often see small effigies of the Virgin or the saints placed in niches in the walls or residences both in the city and the country. These represent vows made by the owner or the people of the household when they were ill or in trouble.

Persons who are very religious are called "fanaticos" and "beatas." The latter term is used especially to describe a woman who has made a vow to her patron saint or to the Holy Virgin to deprive herself of some luxury or comfort, or perform some religious duty either voluntarily or as a penance for sin. For instance, a servant who once attended to our rooms had made a vow never to wear shoes, and is going

barefooted the rest of her life. For that reason she is known as a "beata."

Servants usually go in droves, and when you hire a butler or major-domo, or master of the household, he becomes a sort of general manager of the entire establishment. He hires and dismisses the cook, the chambermaids and other servants, and is responsible for their good behavior. Many families board with their major-domo, and arrange with him to maintain the household, provide the food, fuel, and the servants, and everything else except the fixed charges for rent, water rates, gas bills, wine and similar outside luxuries at a given rate per month. This is not only a measure of convenience but of economy, and people are thus protected against dishonesty and extravagance in their kitchens and pantries. A cook usually feels at liberty to bring her husband and all her children to the house where she is employed, and lodges and feeds them at the expense of her employer. The husband may work elsewhere, but he sleeps and takes his meals wherever his wife lives.

Each detachment of the army of Peru is accompanied by women called "rabonas," who are the temporary wives of the soldiers without the intervention of the priests. They carry the camp equipage and cooking utensils, cook the food and wash the garments of the soldiers, attend the sick and the wounded, and are said to be remarkably skillful in making concoctions of herbs for malarial fevers and other diseases which prevail in the army. During a battle they plunder the dead of the enemy as well as take charge of the wounded of the command to which they belong. They receive no pay, but rations and transportation are furnished them by the government.

Among other of the curious customs in Peru which one learns by experience is that the hackmen charge double price if the top of the carriage is let down. It is the same carriage, the same pair of horses and the same coachman, the same distance and the same time; but if you fancy riding with the top down so that you can see things you will have to pay 2 sols an hour, or 60 cents a mile. Whereas if you are willing to take

things as you find them and have the carriage closed the price is only 1 sol an hour, or 30 cents a mile. Santiago Flores, whose name translated into English means James Flower, an estimable citizen of the United States, of African descent, who secures the patronage of most Americans that come here, explained that the difference in the charge was due to the fact that people "get more benefit" riding in an open carriage than in one that is closed, and ought to pay accordingly.

IX

PERU IN PEACE AND PROSPERITY

Peru has had several years of peace, and shows the effects very plainly in an improved commerce, an enlarged business, the development of new industries, the introduction of many enterprises that promise prosperity, and in the general appearance and contentment of the people. This indicates what might happen in that land of marvelous riches if peace could only be permanent. The frequent revolutions in the past have kept out capital, have reduced the laboring population by death faster than they were born, and has caused a distrust that has made business of all kinds unprofitable. During the eighty years since Peru achieved her independence, she has had more presidents than there were viceroys and governors throughout the whole colonial period, and it is asserted that only two of them were legally elected. General Pierola, whose authority expired on the eighth of September, 1899, is one of the few presidents who was allowed to serve out his term of four years. He had been dictator on several occasions, and was an habitual revolutionist for twenty years, until after a civil war that disturbed the country for nearly two years, he finally realized his ambition and became the chief magistrate of his country. Pierola made an excellent president, as everybody testifies. He surprised his enemies and disappointed his friends because he did not allow his supporters to enrich themselves through the public revenue or by official influences and favors, which made his administration unique. Until his successor took charge of the government and found an empty treasury it was supposed that Pierola was honest, but an explanation of the disappearance of a trust fund and the anticipation of the customs receipts for three months is still necessary to clear his record.

It is also admitted by his severest critics that if he had

kept his hands off the election machinery when his successor was chosen his administration would have stood as an example for future good presidents to imitate. But through the advice of unwise friends he allowed himself to abolish the highest electoral tribunal or returning board which the statutes provide for the protection of the polls and to review the returns from the several provinces.

This board is composed of nine members, and is known as the Junta Nacional Electoral. The president appoints one member, the senate two, and the house two, representing opposing political parties, and the judges of the superior courts four. In this board as appointed to review the returns of the last presidential election, the supporters of the government candidate, Señor Romana, were in a minority. A quarrel occurred among them. Some people assert that it was intentional in order to give the president a pretext to abolish the tribunal, and the returns of the provincial officials were declared final by an arbitrary decree.

That was a serious mistake, for it not only established a bad precedent and injured the reputation of the president for honesty and fairness, but gave the opposing party and the malcontents throughout the country an excuse to question the legality of Romana's title.

The defeated candidate, Señor Billinghamst, is the son of an Englishman by a Peruvian mother, a man of great wealth invested in nitrate mines and other profitable industries. He was first vice president of Peru under Pierola. He was the principal financial backer of the revolution which brought Pierola into power, and is believed to have advanced that leader eighty or ninety thousand dollars to pay his personal expenses. He expected to succeed to the presidency, and was bitterly disappointed when Pierola brought out Eduardo Romana as a candidate. There were frequent rumors that Billinghamst would use violence to prevent the inauguration of his rival, and it was generally believed that he inspired several harmless insurrections that took place in different parts of the country, but he denied all responsibility for them, and says that he has foresworn politics forever.



Eduardo Lopez de Romano, President of Peru.

Pierola was educated for the priesthood in a Lima "seminario" or theological school not far from the old palace of Pizarro, but before taking orders he spent several years in France and became a soldier. While he has not shown open hostility to the United States, Pierola cannot forget that our government refused to recognize him in 1881 when he declared himself dictator and assumed the presidency of Peru. The Garfield administration recognized the authority of President Calderon, a rival, at that time, and did what it could to sustain him in power. During the war with Spain *El Tiempo*, a newspaper of Lima, which is owned by Pierola and is regarded as the organ of his political party, continually expressed a partisanship for the Spaniards, and has been quite severe in its criticisms of the policy of the United States. It has also shown a spirit of hostility toward American interests, and while Pierola himself has always professed a friendly disposition he could have changed the tone of his newspaper merely by a nod.

There are three political parties in Peru, the democratic party, of which Pierola is the chief, and which assumes to be the friend of the common people; the civilista, of which Manuel Candamo, a rich merchant, is the leader, whose platform opposes the domination of the military element in the government, and the constitutional party, of which Gen. Caceras, recently president and now an exile, is the head. The latter party, however, is practically dissolved.

There is very little difference in the three parties in respect to principles, except perhaps in the civilista faction. Most of the presidents of Peru have been soldiers and have gained power by the support of the army. They have been practically military dictators, and out of the opposition to this custom the civilista party has grown. It demands an entire separation of military and political affairs. It insists that the army shall have nothing to do with the elections, and that its officers shall stick to their duties and not seek civil appointments. Its principal supporters are found among the mercantile and professional classes. Its leader, Mr. Candamo, is in many respects the most influential man in Peru. He is president of the senate, and exercises great power in congress.

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He is president of the chamber of commerce, and equally prominent in commercial affairs. He is also interested in manufacturing enterprises, in banking and in the foreign trade. He might have been president several times, and was proposed as a candidate in the place of Romana at the last election, but persistently declined on the plea that his large private interests require his attention. At the last election in 1899 both the democrats and the civilistas supported Romana, and without Mr. Candamo's assistance he would not have been elected.

There is also a difference of opinion as to the effect of national prosperity upon revolutionary movements. Some people argue that the increase of wealth and industrial activity will furnish the sinews of war to the discontented, and enable them to raise armies to overthrow the existing power. But wiser men take the ground that prosperity always breeds contentment, and that when men are busy making money and the working classes are earning good wages they take less interest in politics and are more reluctant to create disturbances. Peru has not been so prosperous for a quarter of a century as now, and if the period of peace which has continued for four years can be prolonged there is a promise that the abundant natural wealth of the country may be utilized and permanent peace preserved.

Arequipa is the home and the birthplace of Señor Don Eduardo Lopez de Ramona, the president of Peru, and the second civilian who has been elevated to that office. The other was Manuel Pardo, who is known in history as "the civil president," and the founder of the civilista party. Voting is done on Sunday. The polls are in charge of the troops whose officers act as judges of election. At the palace of the president in Lima there was always a military guard, and he was followed wherever he went by a staff of aids who wore handsome uniforms and made an imposing display. Whoever had command of the army, therefore, controlled the policy of the country, as well as the government.

Pardo attempted to abolish all this while he was president and maintain civil government. He employed civilians in

every capacity. He dismissed the military guards around his office and the other headquarters of the government, and never accepted a military escort. But the supremacy of the civil party was of brief existence, for Pardo was assassinated by a soldier in 1878, while he was entering the senate chamber. As Pardo entered the door the sergeant of the guard raised a musket and shot him through the back. He fell dead in the corridor. The sergeant was arrested, and although he boasted that he committed the deed in personal revenge for some fancied injury it was generally believed that he was the tool of a political conspiracy, but after a long and searching investigation no evidence was disclosed, and the sergeant alone suffered, being executed in the plaza.

Pardo was the best president Peru ever had. It was during his administration that the country made its greatest progress, and if he had been spared, the war with Chile, which brought so great disaster, might have been averted. His successor, Prado, who provoked that conflict, deserted his country, abandoned his responsibilities and fled to Paris when he realized the predicament of his country, and that gave a chance for Pierola, the recent executive, to assert his strong character and apply his irresistible energy to the affairs of state.

Romana is the same sort of a president that Pardo was. He is a civil engineer by profession, and takes as little interest in politics as in military affairs, which is a distinguishing characteristic in a country where politics has absorbed the attention of the people to a degree that has been seriously detrimental to its commercial and material interests. But what distinguishes Romana more than anything else is that he was not a candidate for the presidency and did not seek the office—a fact absolutely unique in the history of the South American republics. I do not recall another instance.

Romana springs from an old Basque family of Spain, and his ancestors came to Peru from the province of Biscay about the middle of the last century. The Basques are the proudest and they claim to be the purest race in the world. They declare that they are descended direct from Adam through Tubal Cain; that they escaped the flood by early emigration from

Syria to the north of Spain, and that they speak the same language that was spoken in Eden. They are, no doubt, the most vigorous of all the Spanish races, both mentally and intellectually, and their descendants have been the most progressive and prosperous in the new world.

Romana's family always have been planters in the neighborhood of Arequipa. They have large sugar estates at Tambo, down on the seacoast near Mollendo, and extensive sheep and cattle ranches in the mountains west of this city. They are rich, aristocratic and highly educated. At present the family consists of two brothers and two sisters. One of the brothers, who recently died, Don Juan de Romana, was a famous scientist. He was instrumental in securing the location of the Harvard observatory at Arequipa, and was an intimate friend of the astronomers. Alejandro, the second, is an active politician, has occupied a seat in the senate, has been a member of the cabinet, governor of the province of Arequipa, and has held other eminent and influential offices. It was he who opposed the civil marriage law so bitterly, and resigned from the cabinet because Pierola declined to veto it a second time. He is now a member of the senate from Arequipa. Eduardo, the president, is more liberal in his views.

All three of the Romana brothers were educated in Stonyhurst, the Jesuit college of England. Eduardo was born in 1847, and entered there a mere lad in 1859, where he took prizes for superiority in Greek and for good conduct. In 1868, he entered Kings College of London University, and spent three years in the study of engineering. Upon his graduation he was employed for several years in the office of the Northern State railways of India, and afterward as inspector of bridges at Silvertown, and in railway construction, with his headquarters at Whitby. He was then sent to Brazil as a divisional engineer by the Public Works Construction Company, and was engaged for two years in surveying a line for a railroad around the cascades in the upper Amazon under the direction of George Earl Church. Of the thirty-three foreign engineers employed on that work all but nine died from the effects of the climate.

Returning to England Mr. Romana was received as an associate of the Institute of Civil Engineers, which admits very few foreigners, and he is the only Peruvian who ever received that honor. After traveling through Europe to inspect various engineering works he was called home to Arequipa on account of the death of his father, to take charge of the family estate, which occupied him until the war with Chile in 1881, when he volunteered and served as comandante at Mollendo.

After the war Mr. Romana returned to the family residence in Arequipa, and has since been occupying his time in the construction of public works, for which he has accepted no compensation. He built the gas works, the water works, a large bridge and several public buildings for the municipality, the provincial government and the church, and superintended the establishment of the electric light plant in Arequipa. Everything in the way of modern improvements there can be attributed to his enterprise and engineering skill, but it was all done from patriotic motives. He has consistently declined to accept office or remuneration.

In 1895, after Caceras was overthrown, General Pierola appealed to the Romana brothers to assist him in the redemption of the country, and from patriotic motives Eduardo consented to accept a nomination for congress, where he served one year and was elected vice-president of the chamber of deputies. Since then unsought honors have been rapidly thrust upon him. During his second year in politics he was appointed minister of public works in the cabinet of President Pierola. The third year he was elected to the senate, and the fourth year he was made president.

"I have never sought an office," said Señor Romana, one day while we were discussing political affairs in Peru. "I entered politics very reluctantly, and entirely from a sense of duty, and I have endeavored to serve my country without ambition or the hope of reward. I much prefer a quiet life with my books and estates and the limited professional engagements that have heretofore occupied a portion of my time, but I am opposed to military rule, and when I was appealed to as

a civilian to become a candidate for the presidency I consented more from the fear that some soldier might be selected if I declined than from any other reason.

"I am free to have my way, more free than any other president we have ever had, because of the manner in which I came into the office. I had no obligations to pay, no pledges to fulfill, no friends to reward, no enemies to punish. My hands are entirely free to do whatever I see is for the welfare of my country, and I do not belong to any political organization, although my sympathies are with the democratic element.

"We would like the United States to give us a little more attention," said Señor Romana. "We want more intimate relations commercially and socially. We should have direct communication by steamship between the two countries so that commerce could follow its natural lines. I understand that the British and Chilean steamship companies on the west coast are going to send their vessels, which now stop at Panama, as far as San Francisco, which will give us direct communication with at least one of your ports, but it seems a pity that our transportation facilities should be left in the hands of foreigners. We are very fond of the United States down here," he continued. "I am a great admirer of the enterprise of your people and the liberality of your institutions, and want to be in closer touch with them."

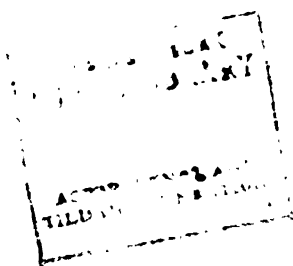
"Would you favor a reciprocity treaty?" I asked.

"Yes, I think it would be a good thing for both countries if a reciprocity treaty were negotiated as soon as our commerce will justify it. We cannot afford to spare any revenues at present, however. We require for the necessities of our government every dollar that we can collect in our custom houses, but I am disposed to think that a reciprocity treaty wisely drawn would increase instead of diminish our income, and at the same time encourage our industries and our commerce."

According to the custom in this part of the world, Mr. Romana has a large family—nine children—four sons and five daughters, the eldest of whom are young men and young women of high ambitions and literary culture. At Arequipa he lives in an old-fashioned house, where his family have



Pearl-Divers, Panama Bay.



resided for several generations, and is the happy possessor of a large library, including an admirable collection of English and American works. He shows with pride the handsomely bound volumes that were won by him as prizes when he was a schoolboy. Professor Bailey, who is director of the Harvard observatory there, is one of Mr. Romana's most intimate friends. They have known each other intimately for several years, and Mr. Bailey has the highest admiration for him.

The legality of Señor Romana's election was questioned in the Peruvian congress on the ground that President Pierola abolished the High Court of Review, and that the returns were therefore irregular. Out of a population of more than 2,000,000 inhabitants but 58,285 votes were cast, of which Romana received 55,908, regardless of the returning board. The votes he did not receive were scattered among a number of candidates, the opposition not being able to concentrate upon any one. There was no doubt of his election, but President Pierola's arbitrary action gave the minority an opportunity to enter a protest, and there was a long and excited discussion in congress, during which Mr. Romana maintained a dignified serenity and indifference.

President Romana took his seat in the gloomy old Palace Pizarro under the most embarrassing but at the same time the most hopeful circumstances. He was received with comparatively little enthusiasm because he was practically an unknown man and had never sought personal popularity. He was a comparative stranger to the politicians of Peru, who did not know whether it was for their interest to shout for or against him. He had no clique, no political clubs, and no organization behind him. His inaugural address, however, created a distinct and favorable impression both upon congress and the public, for it displayed a modest candor that people were not accustomed to.

He offered amnesty to all political offenders who would pledge themselves to keep the peace, obey the laws and respect the authority of the government, and invited all exiles to return to their homes and assist him in an honest effort to serve the general welfare. Immediately after his inaugura-

tion he made his words good by sending a mutual friend to offer an olive branch to General Caceres, the former president, who was overthrown by Pierola and was an exile at the city of Tacna. General Caceres, having been deprived of power by a revolution was supposed to be plotting to secure his restoration by similar means. When he fled from Lima he was the commander-in-chief of the army. After his departure and in his absence he was tried by court-martial for treason and acquitted, so that he still holds the highest military rank in the republic and has never forfeited his commission. President Romana reminded him of that fact and invited him to return to Lima and resume command of the army, offering him the full power of his rank and back pay since he left the country. This was not only generous, but an audacious act on the part of the president, which can only be appreciated by people familiar with the character and career of Caceres, who has been a disturbing element in the politics of the country for more than twenty years, and in a state of continual rebellion except during such times as he has occupied the presidential office. To place him in command of the army and the defenses of the country and to give him control of all the munitions of war seemed sure to invite another insurrection, but President Romana was confident that Caceres would respect and justify the trust reposed in him if he were invited to assume his legitimate place at the head of the army. He realized that there was a great risk, but had the nerve to take it.

But General Caceres, unaccustomed to such candor and generosity, declined to accept the olive branch and return to Lima. He could not comprehend the motives of an honorable man. He is so accustomed to conspiracy, intrigue and duplicity that he suspected a trap and evidently feared that he would be arrested and shot as soon as he arrived at the Capital. President Romana, however, attempted to reassure him and induce him to return, and at least made a favorable impression upon the followers of Caceres and upon the public generally, and confirmed his promises to inaugurate a conciliatory policy. Other exiles accepted the proclamation of amnesty

and returned home. At the same time the new president ordered the removal and punishment of several officials who had long been feared and complained of, but held their places because of some political pull on the previous administration.

This was a novelty to Peru, where the governors of states and petty officials have been pretty sure of retention as long as they were loyal to their chief. There were several revolutionary movements in different parts of the country, but none of them assumed serious importance. They were led by disaffected politicians and irresponsible adventurers for the purpose of punishing or frightening the new president. They collected a company of followers, found arms and ammunition and raided around the country, whooping and shooting, stealing cattle and horses, robbing banks and haciendas, and issuing proclamations calling upon the people to rise and follow them in a movement to overthrow the government.

President Romana was seriously embarrassed upon assuming office to find an empty treasury. The last dollar was drawn out before the close of business on the day preceding his inauguration, and one of the latest checks was to the private secretary of President Pierola. Not only was the treasury empty, but warrants were issued for payments that would absorb all the estimated revenues until January 1 three months in advance, leaving the new administration entirely destitute during that period. But what was even more serious was the discovery that a trust fund amounting to \$800,000, the proceeds of a tax on salt which was authorized for the purpose of raising money to pay Chile for the restoration of the Tarapaca desert, held by the latter government since the war of 1881, had been drawn out and used for some purpose unknown. The minister of finance, when interrogated on the subject in the chamber of deputies, admitted that he could give no explanation; he could only say that the money had been drawn out by order of the president, and was not familiar with the details of its disbursement. The matter was referred to a committee of inquiry, which did not do anything. The defenders of the late administration were quite positive that the funds were used to construct a cart road to reach the coffee

regions and mining camps on the eastern slope of the Andes; others explained that it was needed for putting down a rebellion at Iquitos, in the Amazon country, but as there has been no official explanation and the construction of such a cart road as described is not known to the public, the mystery remains unsolved and the people are allowed to draw their own inferences. With the assistance of Mr. Candamo, president of the chamber of commerce, and Mr. Aspillago, president of the Instituto Tecnico, President Romana was able to borrow upon his personal credit a sufficient sum of money to meet the emergency and keep the wheels in motion for the time being; but it was rather a novel situation for the new president to be compelled to pay the expenses of the government out of his own pocket.

It became necessary for President Romana at an early day to declare his policy on the most important of all political questions in Peru, that of the relation between church and state, and he met the crisis with modest courage and composure.

He came into office with a reputation of being what they call a "fanatico"—that is, a religious devotee, an extreme churchman who subordinates everything to his religion—as his brother is. He was the church candidate for the presidency, and had the ardent support of the clergy throughout the country, which led the liberal element of the population to fear that he would surrender the control of affairs to the priests. This impression prevailed so generally that there was a decided sensation when the newspapers announced that President Romana had accepted an invitation from the Italian colony to participate in a celebration they had planned for September 20, the anniversary of the overthrow of the temporal authority of the pope, and the establishment of civil government at Rome. Archbishop Tovar and Mgr. Gaspari, the papal nuncio, hurried to the palace to obtain a contradiction of the report, but to their amazement the president confirmed it. They entered a solemn protest on the ground that such an act would be considered a repudiation of the church.

Mr. Romana replied that it was not susceptible of any such

construction. The origin of the holiday had no significance to him. It was customary for each of the foreign colonies at Lima to have a celebration during the course of the year and for the president of the republic to attend them. The Germans celebrated the birthday of their kaiser and the English the birthday of their queen, the French the anniversary of the fall of the Bastille, the citizens of the United States the Fourth of July, and the Italians had selected the 20th of September for their fiesta. They comprised a large and important portion of the population, larger than any other foreign colony in Peru, and he had accepted their invitation for the same reason that he had accepted one from the Chilean colony two days before to celebrate the anniversary of their independence. He intended no reflection upon the pope or the church; he was too loyal a churchman to be suspected of such a thing, but he was president of Peru, and not an official of the church or subject to ecclesiastical authority in the performance of his duties. This firmness and liberality was unexpected, but brought to the cordial support of President Romana the liberal classes of the population and the commercial element, which had hitherto distrusted him.

Like her nearest neighbor, the republic of Ecuador, the government of Peru has adopted a gold standard and the currency is now issued on that basis. The sol, a silver coin which until recently has been the standard, is accepted at or near its actual bullion value—or a ratio of about 32 to 1—and is redeemable for 50 cents in gold, although it contains the same amount of silver as the standard dollar of the United States, the sucre of Ecuador and the yen of Japan. The libre, which contains the same amount of gold as the pound sterling, or \$4.87 in United States money, is the standard. Ten silver soles make one libre, ten reals make one sol. The coinage of silver has been stopped. The mint is entirely occupied in the coinage of gold. Paper money is obsolete. The common currency is still silver, which is awkward and inconvenient, but the new gold coins are gradually coming into circulation as the volume increases, although they are still held at a slight premium which is due more to their convenience and their

scarcity than to any other reason. There are no banks in the interior, and the use of checks, or "chits," that are so common in the eastern countries, is almost unknown. The traveler who is going into the interior for pleasure or for business is compelled to carry coin with him, and if he takes silver he has to hire an extra horse. Therefore there is an active demand for gold, and the people who need it are willing to pay something for the advantage it brings them.

Peru has had a remarkable experience with its currency. The people know all about fiat money, for after the war with Chile and at other times when revolutions have been under way, the country has been flooded with irredeemable paper, which has often passed current as low as two, three, and four cents on the dollar. The most serious crisis in the financial history of Peru followed the war with Chile in 1881. The government had issued millions of dollars in paper currency to pay the soldiers and to purchase supplies for them, and, notwithstanding the desperate efforts that were made to sustain its value, it kept growing weaker and weaker, until finally merchants and marketmen refused to take it even at a discount of 95 per cent.

President Pierola, who was dictator, issued a decree declaring the paper currency legal tender for all transactions, and threatening imprisonment and other penalties to tradesmen who refused it. At the same time the government insisted upon the payment of custom duties and other taxes in coin, and as long as it would not accept its own money the merchants concluded to follow its example. Three or four were arrested under the decree and thrown into prison. The remainder marked up their goods sufficiently to cover the discount, and demanded \$2 a pound for beef, 75 cents a pound for sugar, and \$100, instead of \$5, for a pair of boots.

When Pierola went out of power there was some slight improvement, for a "constitutional" president was inaugurated, congress was called together, and a serious effort was made to reorganize the government and the finances. But the reform did not last a great while, and the paper money was still a heavy load to carry.

Finally Antero Aspillago, the secretary of the treasury, who is now president of the Instituto Technico, decided to knock the dragon in the head. The government did not want to make a record of repudiation, but there were other ways to get rid of the obnoxious currency. The opportunity came when the intendente of Callao was called upon to arrest a merchant of that city for refusing to accept payment for a purchase in paper money. He telegraphed to Lima for instructions. Aspillago telegraphed back that the police authorities had nothing to do with the case and must not interfere. This ruling was instantly published over the entire republic, and solved the problem in a few days, for if people could not be arrested for refusing to take the fiat money, of course they would refuse. So the merchants throughout Peru, with one accord, demanded silver or gold from every purchaser, and the government turned its back and closed its eyes.

The banks had long ago declined to accept paper money on deposit. There was a small riot at the market in Lima because the hucksters would not receive paper in payment for meat, potatoes and bread, but the police refused to interfere, and in a few days the public settled down to the conviction that paper money was entirely worthless. Some demonstrative persons made bonfires of the currency in the plazas, but people generally accepted the situation without protests or objections, and paper currency became obsolete in Peru.

Since then silver sols have been the circulating medium. The mints were kept busy coining money for the miners at the rate of about \$40,000 a week, and the coins were exported in order to evade an export tax on bar silver, which was 5 per cent of its value. There was no export tax on coin, and the fee of the mint was 3 per cent, so that those who took advantage of this method made a profit of 2 per cent. About \$500,000 in silver is absorbed by the people of the interior every year. Much of it is used to manufacture ornaments. More is buried in the ground for safe-keeping, because there are no banks and the tax-gatherers are always on the lookout for their prosperous fellow-townsmen. As long as people have nothing it is no use to assess them for taxes or call upon them

for parish dues, and therefore when a peon gets hold of an extra silver dollar he hides it as quick as he can.

After the fall in the price of silver and the close of the India mints the miners of Peru looked for copper and have made a great deal of money from that metal. The silver coined and exported as I have described paid the expense of operation and transportation, and the proceeds of the sale of the copper have been all "velvet." Nearly all the mines that are in reach of transportation facilities have continued operations. Backus & Johnston, two Americans from Cleveland, O., have established large modern smelters at Clasapalca, near the terminus of the famous Oroya railroad. The smelters are under the direction of Mr. Henry Guyer, who came here from Montana two or three years ago. They have been shipping large quantities of silver and copper both to Europe and the United States. The total exports in 1898 were \$9,481,213, which was an increase from \$6,448,567 the previous year.

When the mints were closed to silver coinage in 1897, it is estimated that there were 4,500,000 silver sols in circulation, and a decree was issued prohibiting the importation of those that had been shipped out of the country.

The single standard law was the result of persistent and long-continued efforts on the part of Manuel Candamo, president of the chamber of commerce and leader of the civilista party; Miro Quesada, editor of *El Comercio*, the oldest and most influential newspaper on the west coast, and other men of their stamp. They failed several times in congress, but finally got the law through the chamber of deputies by one majority. The senate was always with them. Of course there was decided opposition, chiefly from the hacendados and other persons producing merchandise for export. They paid silver for wages and received gold for their produce, and they feared the effect of the legislation. Many politicians also predicted that the adoption of a gold standard would be the ruin of Peru and used the same arguments in favor of the free coinage of silver that are familiar to us in the United States.

The result was a surprise to all classes. Values in the local markets have not been disturbed, and wages have not

changed. The laborers on the plantations and the mechanics in the manufacturies are still paid in silver sols at the same rates that prevailed before the law was passed. The butchers and bakers and hucksters sell their food for the same price and accept the same money. The only difference is an increase in the cost of imported goods. They were paid for in gold and sold for gold prices before the law was passed, just as they are now, but the government now requires customs duties to be paid in gold, and that is practically an increase of 100 per cent from the time when they were paid in silver. The change in the financial system has, however, acted as a stimulant to the investment of foreign capital, and has considerably improved the credit of the government abroad. The value of silver has been maintained, and sols have not fluctuated more than 3 or 4 per cent at the outside.

The revenues of the government show a decided increase, as may be seen by the following statement:

1895	\$ 6,034,594
1896	10,703,023
1897	12,172,506
1898	14,318,312

It will be interesting to know the sources of the Peruvian revenue, which were as follows for 1898:

Customs duties	\$6,726,871
Licenses and concessions	3,000,926
Tax on salt	569,718
Rent of wharves	64,740
Various taxes.	319,482
Telegraph tolls	36,186
Postal receipts	254,471
Miscellaneous receipts	253,391

The telegraph tolls are for messages sent over the land lines, which are owned by the government. The small postal receipts are an index to the intelligence of the people. At least 80 per cent, including almost the entire laboring population outside of the cities, are illiterate. The total population is estimated at 2,622,000, of whom about 300,000 are wild

Indians occupying the forests on the eastern slopes of the mountains.

The foreign trade of Peru also shows a remarkable increase. In 1898 the imports were \$19,297,272, and the exports \$30,274,775, making a total of \$49,572,048. The coasting trade amounted to \$27,095,938, making a total of \$76,667,986, an increase of \$10,521,497 from the previous year.

The imports into Peru consisted of the following classes of articles in 1898:

Cotton goods	\$4,067,668
Woolen goods	1,376,643
Linen goods	259,228
Silk goods	293,509
Lumber and furniture	1,273,244
Iron and steel	8,456,067
Provisions and other food products	2,261,453
Wines and liquors	509,758
Drugs and medicines	799,797

There was an increase in every class of articles except woolen goods, which fell off \$41,391 from the previous year. The largest increase, amounting nearly to \$2,000,000, was in iron and steel, and represented railway supplies and machinery.

Great Britain has the lion's share of the trade, and has always had it.

The imports in 1898 were divided among the principal nations, as follows:

Great Britain	\$8,632,771
Germany	3,401,887
United States	2,078,376
France	1,554,004
Chile	1,368,530
Italy	667,694
Belgium	600,393
China	526,649

The trade with no other nation amounted to \$500,000. There was an increase in favor of all the nations named except

China, where there was a falling off of \$41,378. The largest increase is shown in the imports from England, which amounted to \$1,800,000. The imports from the United States also show considerable improvement, the increase being \$430,849 in 1898, when they were larger than for any year since 1871.

The exports of Peru were as follows in 1898:

Silver and copper ore	\$9,481,213
Sugar	9,220,981
Wool	3,082,635
Raw cotton	2,469,955
Hides and skins	831,186
Cacao	876,345
Rice	633,465
Borax	574,226
Coffee	541,715
Fruits and vegetables	506,709
Silver coin and bullion	921,172

There are a good many other items in the list of exports, but none of them exceeded \$500,000.

The cotton and mineral exports went chiefly to Great Britain, the rice to Ecuador and the sugar to the United States, to make up for the falling off in the product of Cuba. That trade, however, is only temporary, and the Peruvian sugar-growers will be greatly disappointed when they discover that fact.

The export trade is divided as follows among the different nations:

Great Britain	\$17,153,936
Chile	4,588,479
United States	2,873,526
Germany	2,703,772
Ecuador	892,006
France	820,952
Bolivia	628,926

There were exports to several other nations, but none of them exceeded \$500,000 in value.

X

THE CONGRESS OF PERU IN SESSION

It is customary for the congress of Peru to assemble on Independence day and receive the message of the president. The lower house of congress occupies the ancient edifice of the College of San Marco, the oldest institution of learning in America, which was founded by the Jesuit fathers in 1551, sixty-nine years before the pilgrims landed at Plymouth. This venerable structure has been restored, but still shows signs of its antiquity.

The chamber of deputies is a long, narrow room, with crimson paper upon the walls and upholstery of the same color. The woodwork is painted white and lined with gold, and there is a beautiful ceiling of carved oak more than three centuries old. The president or speaker usually sits on a gilded chair under a velvet canopy, upon a dais approached by three steps, with a velvet cushion under his feet, and they call it a throne. On this occasion, however, the seat of honor was surrendered to the president of the republic and the president of the senate, who presided over the joint session, and two gilded chairs and two velvet cushions were placed side by side on this occasion.

The members of the house sit in rows of arm chairs built into the wall on either side of the narrow apartment like those of a choir in a cathedral and somewhat similar to the house of commons in England. There is a large table in the center of the room, with a ponderous writing set of silver, a silver clock and a large crucifix of handsome polished mahogany, bearing an ivory figure of our Savior. Two lighted candles burn on either side, and in front of the crucifix is a silver urn. At the center of one of the side walls is a tribune or pulpit for the orators, and the members are required to occupy it when they

make speeches. Under it is a little ebony table for the use of the official reporter. In narrow galleries, which are fastened to the wall like brackets, and are reached by narrow, winding stairways, are a few seats for the diplomatic corps, and a little corner that will accommodate five reporters. Behind the rail which separates the sanctum sanctorum from what we may call the lobby, are seats for about seventy-five or eighty persons, and high up toward the ceiling is a Moorish gallery of carved wood, the natural color, for the accommodation of the ladies. Altogether, it is a quaint, old-fashioned little room, and the proceedings were conducted with an old-fashioned decorum and propriety that corresponded well with the surroundings.

The members came filtering in through private doors during the half-hour preceding the time of meeting, and every one was in what we call evening dress, a swallow-tail coat, low-cut waistcoat, white necktie and white gloves. Some of them carried opera hats, and indeed they were attired just as if they were going to a ball. The secretaries and clerks were clad in similar manner, and the pages wore livery and buttons like bell boys at a fashionable hotel. A military-looking man with a prodigious mustache, a resplendent uniform covered with gold braid and scarlet trousers acted as sergeant-at-arms and chief usher, and was assisted by several officers of lesser rank. During the proceedings he occupied a seat beside the throne.

There are 113 members of the house and 102 were present, of whom the votes showed that the government had a majority of six. The roll call disclosed one general, seven colonels and six priests. The priests wore their ecclesiastical robes. Three members are brothers named Seminario y Arambura, from the city of Piura. They sit side by side, belong to the same political party, are all colonels in the army, and their family is one of the oldest and richest in Peru. Among the surnames I noticed one Abel, one Moses, one Isaiah, one Ezekiel, one Cataline, two Cæsars, and ten Johns.

The Isaiah is a son of President Pierola, a fine-looking young fellow, short and plump, with a pleasant face and an unostentatious mustache. He would pass in Chicago for a prosperous member of the board of trade. The president's

brother, Carlos, was speaker of the last house, and presided over the preliminary proceedings, so that the Pierola family was well represented. Carlos looks like the typical Spaniard, with intensely black hair, Vandyke beard, and the manners of a courtier. Sousa, the new speaker of the house, is the president's brother-in-law, and on the streets of Chicago might easily be taken for ex-Mayor Hopkins.

Altogether the members of the house are a fine-looking set of men, and they showed a sense of their dignity and the importance of the proceedings, which were more impressive than we are accustomed to in the house of representatives at Washington. They couldn't have behaved better at the funeral of an archbishop. The dim light of the room, the black garments and white gloves, the deferential manners and stately composure that prevailed throughout made frivolity impossible, and if John Allen or William E. Chandler should be elected to the Peruvian congress and attempt any of their jokes they would be expelled without reference to a committee and by a unanimous vote.

When 3 o'clock came, one of the pages opened the big doors that led into the patio, and rang a hand bell vigorously, just like a country schoolteacher calling the children in from recess, or a farmer's wife summoning the hired men to dinner. A file of soldiers marched briskly in and stood at "attention" on either side of the entrance. Tardy members of the house sauntered in, bowed politely to their friends, and took their seats in silence, each political party on its own side of the chamber.

While the clerk was calling the roll the general of the army with his staff appeared in a uniform quite as elaborate as that of General Miles. The citizens who had seized the seats in the public gallery refused to surrender them to him, although the sergeant-at-arms admonished them sternly. Thus, for once, the "civilistas" got the better of the military in Peru, but the general and his staff punished them by treading on their toes and standing directly in front of them so that they could not see anything that was going on.

The first business in order was the election of officers.

There had been a caucus and a compromise, which is customary. The government party gave the opposition one of the two vice-speakers and one of the three secretaries, who were formally elected by ballot. Then we learned what the urn was for. As the roll was called each member came forward and dropped into it a ballot upon which were written the names of the candidates he supported. Ordinary voting is done with marbles in a similar manner. A white marble dropped into the urn means a vote in the affirmative, a black marble means a negative vote.

The speaker, or president, as they call him, uses a little silver tea bell instead of a gavel. When the outgoing president, Carlos Pierola, had counted and announced the vote, he called Aurelo Sousa, his brother-in-law and successor, forward to take the oath. A page brought a beautiful velvet cushion edged with gold braid, and placed it on the floor beside the table, while a second page brought a Bible, handsomely bound in red morocco and gilt, with a golden clasp. The new speaker knelt upon the cushion, looked upon the crucifix in front of him, and laid both of his white-gloved hands upon the word of God, while the oath that bound him to support the constitution and the Holy Apostolic Roman Catholic Church was administered. As he rose from his knees his brother-in-law shook hands with him and with a graceful gesture yielded the chair. There was no applause, for any demonstration is considered unbecoming. The new speaker bowed to the right and then to the left, where his political friends and foes were sitting, and then bowed to the middle of the room, where there was nothing but empty chairs, brought in for the accommodation of the senators, who came later. Then he went down into his breast pocket and produced a manuscript, which he read in a sonorous voice.

The new vice-presidents were sworn in together, kneeling on the same cushion, and then the other officers, and after them the members of the house took the oath of office in bunches of four in a similar manner.

While this was going on the senators came rambling in by twos and threes for the joint session, and, bowing gracefully

and respectfully to everybody, dropped into vacant seats. They also were in immaculate attire, with their evening suits, white gloves and opera hats, and were older and altogether more substantial in appearance than the deputies. There were deeper lines upon their faces and more material in their waistcoats. There were several Indians, two mulattoes, and three priests in their clerical robes, among the senators. The senate of Peru, collectively speaking, is a much better-looking body than the senate of the United States.

As in our own congress, a committee was appointed to wait upon the president of the republic and inform him that congress had organized and was ready to receive any communication from the executive power. While it was gone the clerk of the senate entered the tribune and read with considerable dramatic power the Peruvian declaration of independence, which was adopted seventy-eight years ago. During the reading the judges of the Supreme Court entered, wearing wide ribbons of red and white around their necks, cocked hats with black plumes, and carrying walking sticks, ornamented with golden cords and tassels. Then came the diplomatic corps, headed by the papal nuncio, who wore a purple cassock over a scarlet frock.

Then there was a long wait until the notification committee returned and announced that the president was on his way to the chamber. But no people can better dispose of themselves in idleness than the Spanish-Americans, and none can maintain such a dignified ease and composure under circumstances that would easily irritate an Englishman or an American. The silence was at last broken by the sound of bugles, long drawn out and always ending with a ludicrous little screech an octave higher. Then there was a clatter of hoofs and wheels upon the cobblestone pavement, a clanging of sabers, a hoarse shouting of orders and a rousing cheer, which still filled the air when a dapper little man stepped quickly into the patio with a smile on his face and a graceful acknowledgment of the cordial reception. He wore a Conkling curl on his high forehead, and looked as if he had a private barber and kept him well employed. His tiny feet were shod with polished patent

leather. A good face has President Pierola, and a kindly expression. He loves to please, and they say his greatest fault is a craving for admiration; which, by the way, is not a crime in a public man. He has quick, nervous mannerisms. Every muscle in his small frame and every mental faculty is always alert. His style and manners are Frenchy, the broadcloth suit and the embroidered shirt he wore were made in Paris, and the handsome carriage, decorated in scarlet and gilt, in which he drove from the palace, is an exact copy of one that was used by Jules Grevy when he was president of France. Across his breast Pierola wore a sash of the national colors, with a heavy silk tassel at the end.

The president entered the chamber slowly, with perfect self-possession and an eye to dramatic effect. He smiled as he caught the eyes of several friends while he stood on the threshold waiting for his cabinet to catch up with him, and bowed to several individuals of both political parties as he passed between them to the president's chair, followed by his ministers and a military staff in brilliant uniforms. He shook hands with the president of the senate and the speaker of the house, and, accompanied by the former, mounted the platform and took his seat in one of the gilded chairs. After a brief interval, that permitted quiet to be restored, he arose and rendered an account of his stewardship for the previous four years.

The message was criticised as boastful, but it is a long time since any president of Peru has earned a right to boast, and Pierola's pride has a good foundation. He has the right to take the credit to his administration for the prosperity of his country and the prospects of peace and progress for the future. He spoke with gratification of the improved credit, the enlarged commerce, and especially of the fact that there would be no deficit in the national revenues during the current year, which I believe is unprecedented, at least in the present generation. Only once was he interrupted by applause, and that was spontaneous, the result of an irresistible spirit of approval among the spectators when he spoke of threatened revolution and declared it impossible, not because the power

of the government could prevent it, but because the people were determined to have peace.

As he commended his country to God in the usual formal phrases that conclude each public document, Pierola sank into his seat, the most thoroughly satisfied man that ever occupied the presidency of Peru, and a few moments later, when he shook hands with the president of the senate and bowed his way out of the chamber, he closed an epoch of unusual importance in Peruvian history; a period of four years of peace.

The system of government in Peru resembles that of France more than that of the United States. The cabinet ministers are responsible directly to congress, as in England, France and some other European countries, and are compelled to resign whenever there is a change in the political complexion of the legislative branch of the government or whenever a lack of confidence in their administration is expressed. When a new president is inaugurated he designates some distinguished leader of the majority to form a cabinet, as is done in France, and the appointments are subject to confirmation by both branches of congress. The ministers do not have seats on the floor, but are sent for from time to time and interrogated upon matters of business under their jurisdiction. Ministers are also authorized to prepare and present laws to both houses and assist in the discussion, but are required to retire before a vote is taken. Every senator and member of the house has an alternate elected at the same time, who has rights and privileges similar to those enjoyed by alternates in our political conventions, and whenever the principal fails to appear or desires for any reason to take a vacation, his substitute draws his pay and performs his duties.

Members of congress are paid 40 sols a day during the time they are employed. The president has a salary of 24,000 sols a year, with an allowance of 51,000 sols for the support of the palace and the contingent expenses of his office. In 1899 the expenses of the legislative branch amounted to \$364,370 out of a total of \$12,604,670 for the entire government. The diplomatic and consular service cost \$87,473; the courts, prisons, schools and other institutions of similar character, \$1,300,350,

the treasury and custom service, \$3,485,900; the army and navy, \$3,370,470; the department of public works, \$430,660, and the interior department, which is the largest and most important ministry of the government, \$2,778,170. This includes the postal and telegraph service, the cost of elections, and the salaries and expenses of governors and other officials of provinces and towns throughout the republic, who are all appointed by the president and subject to his removal.

The schools come under the minister of justice. It costs \$9,000 to support the public library, \$3,480 to care for the national archives, and \$160,770 was contributed by the government for the support of the university and different colleges throughout the republic, of which the university proper received \$82,530.

The total contribution to the church is \$162,140, which is expended in the support of the cathedrals and the salaries of the bishops at Lima, Trujillo, Cusco, Arequipa and other dioceses. The archbishop receives a salary of 8,000 sols. A large staff of secretaries and assistants, deans and canons, and even the organist and the janitors of the cathedrals, are upon the pay roll. All the cathedrals throughout the country are kept in repair and sustained by the federal government.

The ordinary schools are supported by the municipalities and provinces, and education is nominally free and compulsory for children between the ages of 6 and 12 years, but the law is not enforced except in Lima, Callao and one or two other cities. The teachers are ill-paid, the buildings are inadequate, and in the interior schools are few and far between. The general government pays little attention to them, and their condition depends entirely upon the character of the governor of that particular district.

While taking a trip over the famous Oroya road we visited a typical Peruvian country school at the little town of Chicla, in the heart of the Andes. It occupied a low-roofed mud hut adjoining the village church. There were about forty youngsters of both sexes, twelve years old and under, with bright, beadlike eyes, Indian features, stiff, coarse, coal-black hair, sturdy frames, and most of them had intelligent faces, partic-

ularly the girls, who were more neatly dressed than the boys. Their teacher, from her appearance, was evidently a superior person, for her complexion was white, her manners were good, and she seemed to be well educated. The teacher of the boys' school was a dull-looking fellow, with a low brow and a furtive eye, who wore a sarapa or shawl around his throat and face, and kept his hat on in the schoolroom as if suffering from cold. The alcalde of the village happened to be present superintending some repairs upon the building, whose crumbling walls were being re-enforced by fresh coats of mud that was mixed under his directions in the courtyard. The schoolhouse was as rude as a "dugout" on the prairies of Kansas in early days. The only furniture was a long table in the center and three or four low benches without backs. The wall was decorated with large cards upon which the alphabet, the diphthongs and words of one syllable were printed for the benefit of pupils whose education had not yet reached the period of books. With glowing pride the teacher called up his prize pupils and had them point out upon an illustrated chart the different forms of money, weights and measures used in Peru. Then the children gathered in the patio and sang the national hymn for us, after which we took their photographs collectively and threw pennies into the air for them to scramble after.

The fashionable school for young ladies in Lima is the convent of San Pedro, an ancient institution, at which the daughters of wealthy families for many generations have been educated by the Sisters of the Sacred Heart. There are various private schools for boys also, and among the most successful is a commercial high school with a three years' course under the care of the Rev. Dr. Wood of the methodist mission. It is entirely unsectarian, and receives no missionary funds, but is supported by tuition fees, with the help of a financial guaranty from some of the most important business men in Lima. Dr. Wood also has a primary school for both sexes in Lima, with an average attendance of 100 and nine teachers. In Callao he has an elementary, an intermediate and a high school in English and an elementary school in Spanish, in

which he is assisted by the Rev. Mr. Pusey, formerly of Mediapolis, Iowa. These schools are also non-sectarian, and are supported by tuition fees and donations from business men in Peru who are interested in promoting English education, and the deficits are made up by the methodist board of missions. There are sixteen native teachers and helpers, and an average attendance of about 200 pupils.

The University of Peru is a venerable institution—the oldest in America, having been founded by Pizarro shortly after the conquest of the country. Its schools of medicine and law hold their charters from Charles V. of Spain, and for many years young men from all parts of the continent went there for education. There are also classical schools and theological seminaries in connection with several of the monasteries.

Professional men from other countries find great difficulty in getting a start in Peru, because of the jealousy of the local practitioners against foreign competition, who have succeeded in inducing congress to pass rigid laws requiring examinations of the most severe character before foreigners are allowed to practice law or medicine, and the local bar and medical associations make it as difficult as possible for any one to get through. This is, of course, perfectly natural, and we who shut out foreign competition from our own country have no right to complain because other countries will not permit free trade in professional skill.

The people of Peru and other Latin-American countries prefer American practitioners, both in medicine and dentistry, and the local doctors realize it. They also recognize that our schools stand higher than any others in the world, but accept no diplomas on the pretext that fraudulent degrees have been issued by bogus American institutions, and that their fellow-citizens must be protected against quacks. The diplomatic agents of the United States, who have been negotiating for years to secure the acceptance of diplomas from American institutions, have met this objection every time they have proposed the question, and it will never be overcome in this generation. Every man who goes there to practice medicine or dentistry is required to speak the Spanish language fluently

in order that he may obtain an intelligent diagnosis of a case, and his professional knowledge is ascertained by written and oral examinations conducted by the boards of the medical branch of the university. Nevertheless, there are two or three very successful American dentists in Peru, who, because of their superior skill, get the patronage of the best families.

There is also a movement on foot against imported labor. Peru suffers from a want of workmen as well as a want of capital. The population of the country has been gradually diminishing for several years, according to the opinion of men who are well posted, chiefly because of wars and revolutions. The war with Chile fifteen years ago resulted in the death of 40,000 or 50,000 able-bodied laborers and the disability of perhaps as many more. The last revolution, by which President Pierola came into power, cost 10,000 lives, and the ordinary death rate is greater than the birth rate throughout the entire republic, notwithstanding the large families. Some years ago, during the boom in Peru, thousands of Chinamen were imported as laborers upon the railroads and the plantations. They came under contract for a term of years, and were condemned to temporary slavery. They were kept in corrals like cattle, fed at certain hours of the day, and driven to their tasks under the lash. The contracts approved by the government provided that they should receive humane treatment, a certain amount of food a day, medical attendance and other attentions necessary for their health and happiness. But there was nobody to look after them, and on some of the plantations they suffered outrageous brutality. On others they were kindly treated and well taken care of.

Most of the contracts have expired, and nearly all the coolies in the country are now free. The majority of them flocked to the cities as soon as they were released, but some remained on the plantations, married cholo women, and are doing well. There is a prejudice, however, against Chinamen in Peru, as everywhere, because of their frugality and willingness to work for low wages, and further immigration has been prohibited. Thinking that Japanese are less objectionable, some gentlemen not long ago obtained concessions to bring in a thousand

coolies from Japan as an experiment. They were placed upon plantations in different parts of the country, but have turned out badly. The climate does not seem to agree with them, and the labor is too hard. Where a Chinaman will flourish and grow fat, a Japanese will lie down and die from fatigue. It is said that many of them have died from nostalgia, or homesickness.

The army absorbs about 2,500 men every year, and is recruited from the cholos, or Indians of the mountains, who are entirely ignorant and unsophisticated, but are obedient, industrious and subject to discipline. Each province is required to furnish so many "recruits," who are sent down to Lima when the secretary of war calls for them. Conscription is forbidden by the constitution, but there seems to be no objection to seizing a lot of Indians and shipping them away from their homes to the capital whenever they are needed. When they arrive they are clad in comfortable uniforms of blue cotton cloth, are furnished with shoes and hats, and are taught much useful knowledge in addition to their military training, so that they soon become contented, and those who return to their homes at the end of two years' service are much better qualified to continue the struggle for existence than they were in the wild state, and usually become men of importance. But many die of disease or are slaughtered in revolutions; others become so fascinated with city life that they remain about Lima and Callao when the term of their enlistment is expired. A few continue in the army. Thus is the laboring element of the interior continually reduced in numbers, and there is nobody to take their places. Of course, soldiers are necessary, and in time of peace the peons who wear uniforms are undoubtedly much better off than they would be in their own homes.

It takes three days to celebrate the anniversary of Peru's independence, which occurs on the 28th day of July, not including those which are employed in preparation for the fête, and those which are necessary to recover from the fatigue that excessive patriotism produces. The 27th, the 28th and the 29th of July are holidays. During those days the stores and

factories are closed and all business is suspended. Even the steamers at Callao, which by their regular schedules should sail on holidays, have to tie up until the 31st, because the officials of the custom house are off for a good time, and the peons will not handle the cargo. During the evening, according to a venerated custom, everybody goes to the main plaza, a large open square upon which the old palace of Pizarro, the cathedral, the city hall, and other buildings face, and witness fireworks and illuminations which have been prepared for them by the government. Every window is illuminated, the cornices of the buildings are trimmed with lights, and various patriotic designs in gas and electricity add to the decorative brilliancy.

The sidewalk of the square is encircled by a continuous line of booths and tables, occupied by sellers of chicha, the native drink, sweetmeats and other refreshments, who maintain their places continuously from the evening of the 27th until midday on the 29th, and do great business with the hungry and thirsty peasants who come in to participate in the celebration. Military bands give concerts from 7 o'clock until midnight, all sorts of fakirs ply their trade at the street corners, and the thoroughfares are thronged with surging crowds full of chicha and patriotism, and making all the noise they can. Many of them have "buzzers," tin horns and other curious instruments to torture the hearing. Many of these we northern people have never seen, such as the ones called pitos, pifanos, tambores, matracas, zamponas, and cascabeles. The night is a tempest of sound, but everybody is good-natured and embraces his friends as fast and as frequently as he sees them. When a Peruvian peon gets drunk he does not become ugly, but affectionate. Therefore we saw no fighting, but a great deal of hugging, by men as well as by women.

On the night of the 28th the boys are allowed to torment the Chinamen, and the latter hide themselves early in the evening to avoid persecution. There are several thousand in the city, and, as is customary elsewhere, they occupy a quarter by themselves, through which crowds of hoodlums rush brandishing stalks of bamboo and sugar cane with a hope of

finding some celestial to flog with them. The police protect the Chinese on all other occasions, but, by reason of some unhappy custom, they have to look out for themselves on independence night, and it is frequently the occasion of riots in the Chinese quarter when the baiting is carried too far.

At 10 o'clock on the morning of Independence day the president of Peru, accompanied by his cabinet and military staff, the members of the diplomatic corps and the federal courts and many other "functionaries publicos," attends mass at the cathedral, which is usually celebrated by the archbishop.

The church of the Franciscans, and, in fact, nearly all the churches, have been restored at the expense of the municipal or provincial government. The federal government looks after the cathedral only, for that is a national institution, and well it should be, because the church and state have gone hand in hand ever since Pizarro landed on the coast of Peru. When he gathered his little battalion of freebooters in the plaza of Cajamarca, awaiting an interview with Atahualpa, the Inca emperor, "to explain the pacific intentions of the Spaniards in visiting the country," Father Valverde, chaplain of the expedition, stood by Pizarro's side, and as the unsuspecting Indian, reclining on a litter carried by his attendants and soldiers, adorned with plumes of various colors, wearing an armor of gold and silver, embossed with precious stones, came into their presence with the officers of his court, the padre approached him with a crucifix in one hand and a breviary in the other, and commanded Atahualpa in a loud voice to accept the Christian faith, to acknowledge the authority of the pope and to recognize the sovereignty of the king of Spain on the instant, threatening that unless the Inca did as he was told he would suffer the severest punishment. Atahualpa refused, and as a rebuke the Spanish soldiers murdered the whole outfit.

From that time until now the political and religious affairs of Peru have been conducted with similar harmony, with a few short intervals of disaffection.

The archbishop of Peru is an officer of the government. He is elected by congress, his salary and the expenses of his establishment, as well as the cost of maintaining the cathedral,

are paid from the public treasury by an annual appropriation of congress and cost about \$7,000 a month. The pope confirms the appointment and consecrates the archbishop, but according to the terms of a concordat between Peru and the Vatican he cannot remove him or appoint any one to that office without the consent of the Peruvian congress. The archbishops have been generally eminent men. Priests have always taken a prominent part in the politics of the country. Several are members of the senate and chamber of deputies, and both houses are seldom without them. Monks and priests have been elected presidents of the senate and speakers of the house and have frequently served as members of the cabinet. The present archbishop, Mgr. Tovar, was for several years minister of foreign affairs, and is recognized as a skillful politician and a statesman of ability. He has also served for several terms in both houses of congress and has been quite as prominent and active in political as in ecclesiastical affairs. He is still young, active, and popular with all classes, being a man of broad views and much more liberal in his tendencies than his predecessor, Archbishop Bandini.

The president of Peru rides in an elaborate carriage, similar to those used by the crowned heads of Europe. It is large, high, and handsomely decorated. The box is hung with upholstery and fringes of scarlet and white, which are the colors of the republic, and the coachmen and footmen and the two outriders who stand in a boot at the rear are dressed to correspond, with cocked hats, silk stockings, silver buckles on their boots and all the livery of royalty, except powdered wigs. Upon either door of the carriage appears a representation of the coat of arms of the republic about a foot or eighteen inches in diameter, painted in brilliant colors. The carriage is drawn by four handsome bay horses, with docked tails and a harness heavily mounted in silver and bearing the coat of arms on every buckle and rosette.

The cemeteries of Lima, like those of Ecuador and other South American countries, are filled with immense vaults ten or twelve feet high, divided into pigeon holes, each large enough to contain a coffin. These pigeon holes are sold or

rented in perpetuity or for a given number of years. If the rent is not paid after the expiration of the time for which payment is made the coffin or the bones are taken out and buried in the potter's field. After the coffin is placed in the vault the opening is sealed up with a slab of marble, upon which the epitaph is inscribed with appropriate designs. Some of the private vaults are of beautiful architecture and costly workmanship.

There is a special cemetery for criminals, suicides, atheists, duelists and others who die outside the pale of the church. There are a great many free-thinkers in Peru. They are mostly highly-educated professional men who have left the catholic church because of skepticism and do not find greater satisfaction in protestantism. Free-thinkers are found in the universities and the learned societies. Their leader in Peru is a Dutch dentist who was born in the colony of Curacao, in the West Indies, and bears the peculiar name of Christian Dam. Not long ago, at a religious celebration at Arequipa, an effigy was made which bore a marked resemblance to this notorious person and was filled with firecrackers and other explosives. At the proper time the fuse was lighted and the effigy blew into fiery fragments.

Dueling is prohibited by law, and the authorities have endeavored to suppress it by the courts as well as by the church. Duels were frequent in former years, but not long ago a distressing event occurred which has effectually put an end to that method of settling difficulties. Two gentlemen of commercial and social prominence quarreled over a seat in one of the plazas during a band concert, and the next morning met with their seconds and a surgeon at the dueling ground on the outskirts of the city. One of them was killed. The survivor was arrested, convicted and sentenced to seven years' imprisonment. The seconds and the surgeon were sentenced to four years and are now serving time in the penitentiary.

XI

THE STATE OF THE CHURCH

The constitution of Peru declares that the Apostolic Catholic faith is the religion of the country, and that no other form of worship shall be permitted in public. There are, nevertheless, two protestant churches, one in Lima and one in Callao, maintained by the English, German and American residents, and a Methodist chapel in Lima and one in Callao, where services are held in Spanish two nights each week. The Anglo-American church is supported by subscriptions from the foreign residents. The Methodists receive some assistance from the Board of Missions in New York. The Spanish services are tolerated by the government on the theory that they are privately and not publicly held, and this pretense is strictly respected by requiring every native who attends the Methodist chapels to present a card of invitation at the door. These cards are issued by the Rev. Dr. Wood and his native assistants in their evangelical work to all natives who express a desire to attend the protestant church. For similar reasons the Anglo-American churches present the outward appearance of ordinary buildings. A stranger would never suspect that he was passing a church unless he entered the door. Dr. Wood contends, however, that this condition is not necessary, and is ready to test it in the courts whenever he can obtain the funds, by erecting a conventional church edifice similar to those in the United States. The Masonic temple in Callao was built with every appearance of its purpose, notwithstanding the objections and the protests of the priests, the police authorities having decided that such a building could not be prohibited so long as it was owned by a private association. Dr. Wood thinks this offers a precedent of importance to protestant missionary work in the future. There are also in

Lima and Callao a number of Chinese "Joss" houses. One of them adjoins the Methodist chapel in Callao,—and they have never been interfered with.

The only time protestant worship was ever interrupted in Lima was during the "week of prayer" designated by the international evangelical alliance in 1899, when the unusual number of services at the Methodist chapel attracted the attention of the authorities. They were accustomed to see the native protestants or "evangelicos," as they call them, gather twice a week in a little room behind the great monastery of the St. Augustine order, but when meetings were held every evening suspicion was excited, and in the midst of the services one Saturday night, a colonel of the army, who was serving as a captain of police in that precinct, entered the chapel, interrupted Dr. Wood's discourse, and standing by the pulpit declared the meeting illegal and contrary to law and good order. When Dr. Wood expostulated and explained that there was no political significance to the gathering, and that it was intended only for teaching the Bible,—laying his hand upon the book to emphasize his words, the colonel declared that the Bible itself was contrary to the constitution of Peru and ordered the people out of the room. When the thirty men and twenty women present had departed, Dr. Wood claimed immunity from interruption and arrest on the ground that the chapel was his private property and that the congregation were his guests. The colonel did not dispute this statement, but declared that the meetings were illegal and could not be continued.

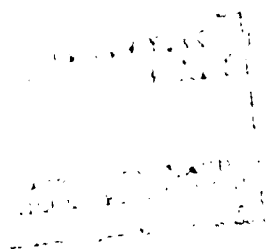
Soon after the officer left the room, Dr. Wood extinguished the lights, locked the door and followed him. When he had reached the street he was immediately arrested by a policeman who had been stationed outside for that purpose, and taken to the Monserrat Barracks, the police headquarters, where he was received with great courtesy and escorted to a room not used for ordinary prisoners, but as a dormitory for the reserve police when they were off duty. The men of his congregation followed him to the police station, and to one of them Dr. Wood gave his watch, notebooks and a message to his

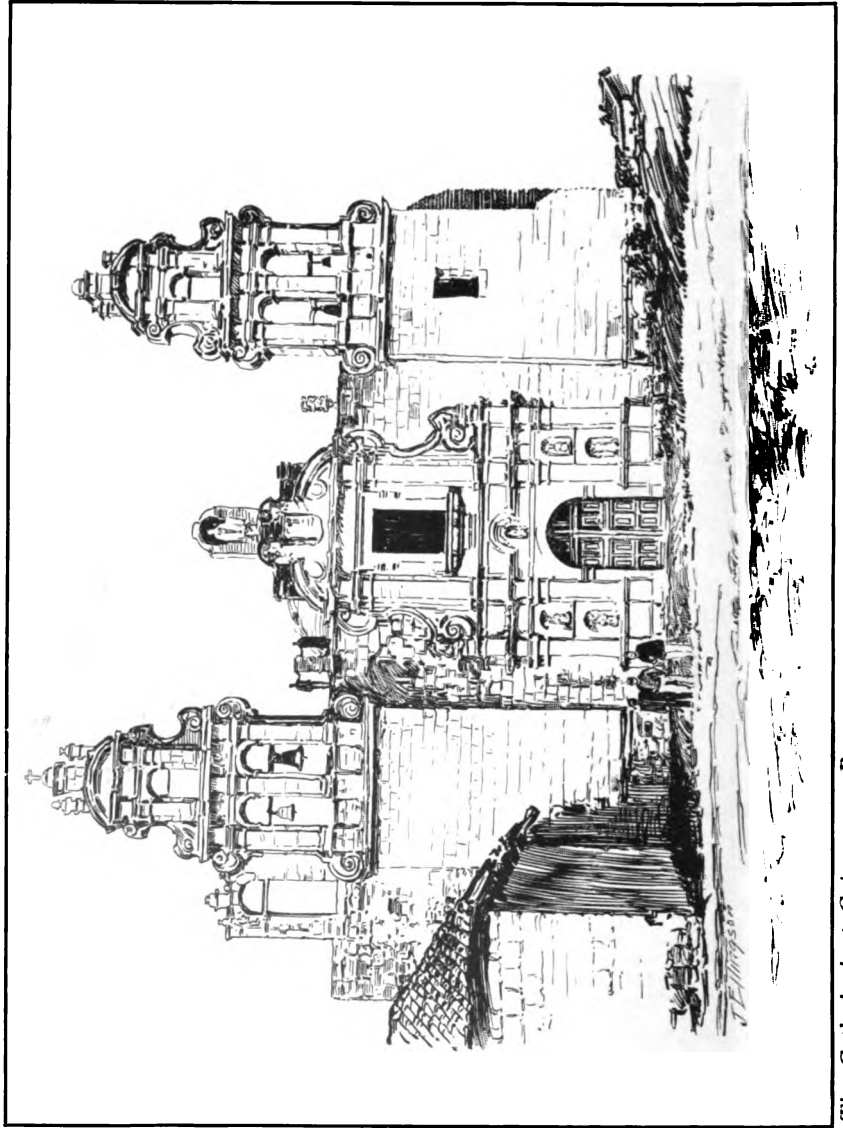
family. The "evangelicos" offered to go to the United States legation and arouse the minister, but Dr. Wood desired to test his rights under the Peruvian law and decided not to appeal for the protection of his government except in a great emergency.

An hour later, near 10 o'clock, Colonel Juan Toreco, a well-known and influential officer of the Peruvian army, then attached to the police force, came in and explained to Dr. Wood that his arrest was due to the illegal character of his meetings, which were contrary to the constitution and the laws of Peru. He, too, explained that it was unlawful to teach the Bible or preach doctrines that differed from the established religion of the country, and, after amiable controversy, offered to discharge Dr. Wood provided he would agree to abandon his evangelical work. Dr. Wood emphatically declined, on the ground that he preferred to test his rights in the courts. Finally Colonel Toreco offered to release him on parole until the next Monday—this was Saturday night—and in the meantime consult the authorities. He was very polite and courteous, both in manners and conversation, and offered Dr. Wood refreshments and a horse to ride to the railway station.

The Methodist natives had all been notified of the occurrence, and on Sunday assembled at the chapel in large numbers. Dr. Wood related his experience, announced his intention of contesting his rights, and appointed a meeting for every night from that date until further notice without concealment or any departure from the regular customs of the congregation.

On Monday he appeared at the police headquarters according to the agreement, and had another pleasant interview with Colonel Toreco, who requested him to suspend his meetings until the authorities could make an investigation and decide the question of their legality. This he refused to do, and, having prepared himself in the meantime, submitted an argument to sustain his rights, which, in brief was (1) that under the constitution no one can be prevented from doing what is not prohibited by law; (2) that the constitution guarantees the protection of private rights and the sanctity of private





The Cathedral at Cajamarca, Peru.

property and that there is no law to prohibit him from instructing his friends in the Bible, or in the doctrine of protestantism, provided it is not done in a public manner. He cited the action of the Supreme court in the case of Francisco Pensoti, an agent of the American Bible Society, who, in 1891, after suffering imprisonment for eight months, was discharged from custody by an order of the court and permitted to hold meetings and preach the gospel privately. The decision of the court in that case, however, was negative, rather than positive, for the purpose of leaving Mr. Pensoti no ground for a claim for damages.

Colonel Toreco finally consented to release Dr. Wood on permanent parole with the understanding that he would not commit any unlawful act, and promised to attend the meetings in order that he might determine himself whether they were illegal. Dr. Wood gave him a card of invitation to be presented at the door. The Colonel did not appear, however, and the meetings at the methodist chapel have not been interfered with since in any way. He has shown more than usual cordiality to Dr. Wood when they have met, and the arrest and the parole have never been alluded to. It was learned afterward that the police authorities were severely rebuked by influential politicians, and by their superiors in the government, both for political reasons and because of the probable effect upon foreign nations and the efforts of the government to promote immigration and induce foreign capital to engage in the development in the mines and other natural resources of the country. It is admitted that the religious intolerance of Peru has been a serious drawback in this development. Foreigners will not go where they are not allowed to worship in their own way and educate their children in protestant doctrines.

In 1895 the protestant community in Trujillo, an important town in the northern part of the republic, was prohibited from holding meetings by the police, who denounced them as unlawful and brought the missionaries before the criminal court. But after a brief investigation no indictment was found, the case was dropped, and no further interference was

offered until 1898, when the government officials called informally upon the missionaries and requested them to suspend their meetings because martial law had been declared, all public gatherings had been prohibited, and it was feared that trouble might be caused if an exception was made in favor of the protestants.

Free Masonry is prohibited by the church authorities, but there are several lodges of natives as well as foreigners in Lima, Callao and other cities of the republic. Some years ago, during the progressive period in Peru, free masonry was very popular among the natives, and the church attempted to crush it by excommunication, but afterwards decided to ignore it so far as possible, although masons are not now admitted to communion, and cannot be buried in consecrated ground. The growth of masonry was stopped, however, when a dentist named Dr. Christian Dam, a leader of the atheistic element, who had been elected grand master of the Peru jurisdiction, banished the Bible from the lodge rooms and publicly denounced it as a fiction concocted by superstitious monks in the middle ages. This created a profound sensation, and both foreign and native masons made a protest at once. The fraternity was divided. Dr. Dam and his supporters withdrew from the old lodges and organized new ones. The priests utilized the incident to organize a crusade against masonry, and tried to make it disreputable. Christian Dam left Lima and went to Arequipa, but was not able to practice his profession of dentistry in that city on account of public prejudice against his atheistical views, and returned to Lima, where he is now living. The incident is being forgotten, and masonry is gradually recovering a normal condition, but is not so flourishing as formerly.

Until recently the courts of Peru did not recognize the legality of marriage performed outside the catholic church. All children born of parents who had been married by protestant clergymen were pronounced illegitimate, and neither they nor the wife could inherit property from the husband and father. No marriage was considered binding unless it received the blessing of a catholic priest. The same conditions for-

merly existed in all the Latin-American countries, but now only Peru, Ecuador and Colombia reject protestant and civil marriages, and in most of the others civil contracts alone are legal, as in France. The couple may go to church afterwards if they like to satisfy their religious scruples or adhere to the ancient custom, but it is not necessary. For several years the liberals have been trying to get such a law in Peru, but have found it impossible. The next step was the passage of an act authorizing and legalizing protestant and civil marriages only among the foreign and non-catholic population. The first time this act was passed, about two years ago, it was vetoed by President Pierola. Congress passed it a second time over his veto by the constitutional two-thirds majority, and Alexander Romana, a brother of President Romana, who had just taken the position of Minister of the Interior and chief of the cabinet, insisted that it should be vetoed a second time; but the remainder of the cabinet and the supporters of the administration in congress warned Pierola that it was unsafe for him to defy the legislative branch of the government, and so he signed it; but Romana resigned rather than give his consent.

The spirit and the letter of the act were practically nullified by the government in the regulations which were framed to carry it into effect. It pleased President Pierola and his advisors to construe it as applying to protestants only and civil magistrates are not permitted to marry catholics. They also officially declared that all natives of Peru, all persons whose parents were catholics, or who have been baptized in the catholic church or educated in catholic schools are catholics under the law. They argue that the catholic religion being the constitutional faith of the republic, all citizens must necessarily accept that religion. Therefore the civil marriage law is operative only for the benefit of foreigners who have been brought up in the protestant faith. For example, when a young Englishman and the daughter of an Italian merchant in Lima desired to be married by a civil ceremony, their request was denied because the young lady had been educated in the San Pedro convent, and therefore must be a catholic.

The alcalde of Callao, where a large proportion of the pop-

ulation are foreigners, whose children are constantly being inter-married with the families of natives, in 1899 asked the government for a reconsideration of its construction of the law, but the cabinet paid no attention to his appeal. The *alcalde* asked: Who shall judge whether a person who applies to be married is entitled to the benefits of the law? Who shall determine whether he or she is a catholic or not? He argued that people who are old enough to be married ought to be able to decide what religious faith they adhere to, and if the applicant declares that he or she is not a catholic, by what right can a magistrate refuse to marry them under the civil law? The minister of the interior replied that all Peruvians are catholics, and that the *alcalde* need ask no other question after he has ascertained the place of birth and parentage.

The authorities also framed regulations which make it difficult and disagreeable for people to take advantage of the civil marriage law, and many who otherwise would have done so have been deterred in order to avoid the notoriety and publicity which is necessary.

It is asserted that more than 50 per cent of the children born in Peru are illegitimate, chiefly among the poorer classes. This is accounted for by the excessive fees required by the priests, which place marriage beyond the reach of the *cholos* or peasants. The fees fixed by canon law are \$1 or \$1.50 for the publication of the bans, \$6 or \$10 for performing the ceremony, and \$3 or \$5.50 for a nuptial mass, if that is desired. The difference in the fees is regulated by the elaborateness of the ceremony, but it is expressly provided that members of the church who are too poor to pay these fees shall be married for nothing, so that the fault lies with the priests if such conditions exist as are described.

St. Peter said: "Thy money perish with thee; because thou hast thought that the gift of God may be purchased with money;" but if a poor sinner in South America wants consolation he must pay for it. If he wants absolution he must offer so many dollars as well as so many prayers. The ordinary priests will not visit the sick or administer the sacrament to the dying unless they are paid in advance, and masses for the

dead are never celebrated except for fees. The marriage fees imposed by the priests are too large for the poor to pay, hence the majority of the population are living as husbands and wives without the sanction of the church, and the great mass of children are illegitimate, perhaps as many as 60 or 70 per cent. Pecuniary penance is imposed at the confessional so frequently that it is not even a matter of comment, and people always expect to pay a fee when they seek the intercession of the Virgin and the saints. The blessing of the Virgin of Copocabana in Bolivia is sold just like the bread and chicha and the knicknacks on the plaza in front of her shrine. The priests must have money and contrive many ingenious methods of getting it. In Costa Rica some years ago, they sold reserved seats in heaven and furnished certificates to the purchaser designating the place he and his family would occupy for all eternity. You can find such certificates hanging in frames upon the walls of some of the best houses in that republic.

In Quito and other cities of South America it is possible to communicate in writing with the Savior, or the Blessed Virgin, or any of the saints, and upon the payment of a liberal fee the monks will obtain replies to the communications, just as the ancient Greeks besought advice from their hidden Oracles. At the Jesuit Convent of San Luis de Gonzaga in Lima, not long ago, there was a letter box hanging in the portico to receive communications addressed to the Savior, the Holy Mother and the Saints, and it was as common for the people of that city to write them letters beseeching sympathy and succor as it is for the children of the United States at Christmas time to write Santa Claus for the toys they crave. If a certain amount of money was enclosed, the communications were answered by the saints to whom they were addressed; if not they received no attention.

Although the sale of indulgences has been forbidden by the church for several centuries, the practice is still continued in the interior villages of Colombia, Ecuador, Peru and Bolivia, and perhaps in some of the other countries; and it is not only possible to purchase absolution for the living, but also peace for the dead. A soul may be translated from purgatory to

paradise at almost any time by the payment of a fee. The priest celebrates a mass at the church, and then goes to the cemetery and utters what is called a "responso" before the tomb of the person in question.

In the interior of Peru and Bolivia a popular method of raising money is by what is called a "Loteria de los Perdidos" (Lottery of Lost Souls). In some localities this practice is as common as church fairs and Sunday-school picnics or Christmas trees with us. A given number of tickets are issued by the priest and offered for sale to the public through the women and children of the congregation, and the sacristan of the church. They are often exposed for sale in saloons and cigar booths, and I have seen them peddled on the street like ordinary lottery tickets for a commission. On the day of the drawing everybody interested goes to the church, and after a brief service a cask is brought out and placed on a table before the altar. The cask is whirled around until the cards it contains are well shaken up, when a little child dressed like an angel, with wings and a crown of flowers, a great deal of tulle, white shoes and white gloves, appears. She dips her little hand into the barrel and draws out as many cards as there are prizes. Persons holding the numbers that appear on these cards are entitled to select some soul that has been suffering in purgatory less than one year for translation to paradise. A few days later the people who hold the tickets contribute to a purse which pays the priest for celebrating high mass, which is often attended with pompous ceremonies. At the conclusion of the mass a procession is formed with the effigy of the Virgin carried upon a litter in advance, and when the cemetery is reached the priest sprinkles the graves with holy water and utters a "responso" to release the souls that have been named.

This is an actual and common occurrence in certain localities, and travelers who have the curiosity to investigate such things can find other practices quite as extraordinary, which are not even notorious, because the people are so accustomed to them. These practices are known at Rome, and have frequently been the subject of serious consideration at the Vatican, but the church authorities are powerless to correct customs

that are the growth of ignorance and superstition on the part of the people and cupidity on the part of the priests. It is not always the bishops, but usually the parish priests that are responsible, and they justify such practices on the ground that they are necessary to raise the funds for the support of the church and stimulate the interest of the people in religion.

An eminent prelate in South America defended these practices to me not long ago, and declared they were quite as legitimate as the social features of religious life in North America. He contended that the church processions and other peculiar features in South America were absolutely necessary in order to satisfy the people, who, if the church did not furnish them such diversions would indulge in others even more reprehensible.

"Of course," he said, "I do not believe in many of the practices that prevail here, but I do not forbid them because I know that they are necessary. The ignorant people of these countries are fond of demonstrations in which they can participate, and it does them more good to carry a banner and walk in a procession than you can imagine. If the church does not provide such amusements the politicians will do so, and it is very important that we keep our people under our own control."

In almost every household is a wooden image of some saint to which its inmates offer prayers and adoration, but, if the blessings they pray for are not realized, they lose their patience and punish the saint as if it was a naughty child. They strip the wooden image of its finery, beat it with sticks, submerge it in a tub of filthy water, lock it up in a dark closet, and use other means of coercion until it is willing to answer their prayers.

Saint Isador is the patron saint of agriculture, and in almost every farming village a chapel or a shrine has been erected in his honor. Before planting and before harvest, and at various times during the season, those who have crops in the ground place money and other votive offerings upon the altar, and make "beatos," or "mandas," two different kinds of vows, and pray for his intercession. After compliance with these requirements, if their crops fail, they revenge themselves by beating or stoning him. If it rains too little or too much, it is cus-

tomary to propitiate the saint by taking the image from the altar and carrying it through the streets trimmed with gay muslins and artificial flowers, accompanied by a band of music; but if this adoration is not effective, if the drought continues, they try another method, and drag the wooden effigy through the streets with a rope around its neck, kicking it, beating it with sticks, and pelting it with stones. The village priests often assist at these performances, and always encourage or at least permit them.

On the 5th of May, 1848, there occurred at Santiago, Chile, a most disastrous earthquake. The morning of that day a woman who had become disgusted with the refusal of her saint to answer her prayers, tore the image from the altar, stripped it of its decorations, and threw it into the street. At that moment the earthquake began, and it continued until a priest, hurrying to a place of safety, picked up the image and carried it into a neighboring church, where he reverently placed it upon the altar. At that moment the earthquake ceased, and to this day the people and the clergy, and formerly the officials of the government, celebrate the 5th of May as a holiday, second only in importance to the 18th of September, which is their Fourth of July. This effigy was formerly taken from its altar and carried through the streets under a scarlet canopy, followed by the president of the republic and his cabinet, the members of congress and the judiciary, the archbishop, the bishops and other prelates of the church, and by thousands of people, with bands of music and banners, and usually a regiment of military as an escort of honor. All the business houses were closed; work was suspended in all the factories, and everybody joined in paying honor to a wooden effigy which was called Saint Cinco de Mayo (St. 5th of May), because the woman who threw it into the street and her family were killed in the earthquake, and it was impossible to ascertain what particular saint it was originally intended to represent.

Since the separation of church and state in Chile, however, this anniversary has lost much of its importance, and is no longer celebrated as a national holiday. Nevertheless, the

church teaches that such propitiation of the unknown wooden image is necessary to prevent a recurrence of the awful catastrophe of 1848.

A great deal of curiosity was excited all over the world as to the purpose of the convocation of the bishops and archbishops of the catholic church in South America, which was called at Rome in the summer of 1899, although it was not an unusual event in ecclesiastical history. On the contrary, it is customary for His Holiness to call together the prelates of different sections of the world at intervals in order to confer with them concerning ecclesiastical affairs, but this was the first time the prelates of South America were ever invited to the Vatican, and there are reasons for believing that the meeting was one of uncommon importance. Its general purpose is supposed to have been the reformation or modernization, so to speak, of the church in South America, where it has failed to keep pace with the progress of civilization, and for that reason has largely lost the support of the educated and progressive classes. There is as much difference between the catholic church in South America and the catholic church in North America as between the African-methodist church of Mississippi and the unitarian church of Massachusetts, and the ignorance and superstition and the moral corruption of the priests have driven the intellectual element of the population into materialism.

In every one of the Latin-American countries, from Mexico southward, the clergy have persistently opposed the education of the people and the introduction of modern improvements, and have endeavored to continue the intolerance of the fifteenth century. The result has been to make the church a political issue and to divide the people into two factions,—the liberals and the conservatives, as they call themselves, or the "clericals," as they are called by their opponents. In nearly all the countries the clerical party has been overthrown and the liberal party is in power. The latter gradually grows stronger as the people become enlightened. Therefore, the more progressive prelates of South America have been endeavoring to liberalize the church as much as possible, for they believe

that such a change is necessary before it can regain supremacy. Wherever there is a liberal government, the orders of religious seclusion have been suppressed, the schools have been secularized, the rite of civil marriage has been adopted, the property of the church has been confiscated, and the people generally have drifted away from the religious training of their fathers. Educated men do not attend church; they neglect the confessional and other religious duties; join lodges of free masons, and encourage the publication of atheistical literature. This tendency has been increasing so rapidly as to give great concern to the hierarchy, and the convocation at Rome was called for the purpose of discussing measures to resist and correct it. Sooner or later, the details of the conference will become known, but at present they are only matters of speculation.

One of the most important events of an ecclesiastical nature that has recently occurred in South America took place in the summer of 1899, and was the first direct result of the convocation. This was the restoration of the archbishop of the Argentine republic and the renewal of relations between the government of that country and the Vatican, which had been suspended for sixteen years. In 1884 a parish priest at Rosario threatened to excommunicate the parents of young ladies who attended a normal school taught by Miss Clara Armstrong, of Winona, Minn. It was a government school, under the supervision of the Minister of Education, for the purpose of educating teachers for the public schools of the country, and although Miss Armstrong was a protestant, she never attempted to teach or even discuss religious questions before her pupils. Nevertheless, the priests held that catholic families should not allow their daughters to remain under the instruction of a protestant, but should send them to the regularly established church schools, and as they declined to do so, he adopted extreme measures, and placed them under the ban.

Miss Armstrong reported the matter to the Minister of Education, who made an investigation and sustained her, and complained to the archbishop that the priest at Rosario was interfering with matters that did not concern him. The arch-

bishop sustained the priest, and the papal nuncio sustained the archbishop, who issued a decree forbidding the children of catholic families to attend schools taught by protestant teachers. General Roca, who was president of the Argentine Republic then as he is now, expelled the archbishop and the papal nuncio from the country for interfering with political and secular affairs, and issued a proclamation, warning the priests of the country that they must not meddle with the public schools.

From that date until the summer of 1899 there were no relations whatever between the Vatican and the Argentine Republic, but President Roca when re-elected responded cordially to the overtures of the church, and entered into an arrangement for the return of the nuncio and the restoration of the archbishop upon a broad and liberal understanding that they and the priests of the country shall devote their entire attention to the spiritual condition of the people, and not interfere in political or secular matters.

Another result expected from the convocation is the appointment of a cardinal to supervise the affairs of the church in South America.

Shortly after the convocation a cablegram sent to the newspapers from Rome contained a copy of an encyclical alleged to have been issued by the Pope absolving the clergy of the Latin-American countries from their vows of chastity and celibacy. It is universally pronounced a forgery, but at the same time persons familiar with the history of the church suggested that it might perhaps be founded upon a meager basis of facts.

Two centuries ago or more the bishops and priests of South America applied to the Pope for a release from such vows, but after due consideration it was decided that he had no power to grant absolution to any one engaged in the ministry. During the Napoleonic régime in France the emperor issued an edict releasing the clergy from vows of celibacy, and a great many bishops and priests married, including Prince Talleyrand. After the restoration of the church this offered a serious dilemma, and the Holy Father granted the necessary absolution to

all priests and bishops who had married wives and legitimized their children, providing they left the ministry. Married priests who remained in the ministry were divorced. The church allowed them freedom of choice between the pulpit and the married life, without attempting to influence them either way, and gave an unrestricted benediction upon the decision of every clergyman who had married under the license of Napoleon.

It has frequently been asserted by prominent prelates of Latin-America that the intellectual and moral standing of the clergy cannot be advanced unless marriage is permitted because the better class of young men will not take the vows of celibacy and are therefore kept out of the priesthood, while those who have less conscience enter it and violate them. But the church has decided that the pope has no power to grant such absolution, and the bishops could not have recommended anything further than to offer absolution to those priests who now have families, provided they leave them or leave the ministry, as was done in France a hundred years ago.

XII

THE MONKS AND THE MONASTERIES

One Sunday afternoon I attended an impressive ceremony at the national penitentiary of Peru, when Bishop Medina of Trujillo confirmed in the catholic communion fifteen Chinese convicts—"Asiaticos infideles," as he called them—and one American, who was serving seven years' time for having attempted to set fire to a schooner at Mollendo some years ago. He says that he was drunk and did not know what he was doing, and that he tried to put the fire out as soon as he realized the enormity of his act. He has been an exemplary prisoner, and is allowed unusual liberties. Having learned the Spanish language, he is employed as an interpreter and messenger about the office of the warden, and conducted us through the institution, which is modeled upon the Moyamensing prison of Philadelphia, and is one of the most complete, well-kept and humane reformatories in South America.

The prisoners are employed in workshops during the day, as in our own prisons, except such as are sentenced to solitary confinement or are under discipline. They make boots and shoes, saddles, harness and similar goods for the army, and are paid for what they produce, so that each one has a considerable balance of money to his credit when he is discharged—usually sufficient to maintain him until he can find honest employment. At night they are shut in their cells, which open upon long corridors that run like the spokes of a wheel from the central guardroom, where officers are always stationed. By turning in his chair a guard can inspect every corridor. All the cells in the same row are locked with a single lever, and the prisoners move out and in, rise and retire, prepare themselves for their meals and the duties of the day to the sound of a bugle.

They are called at 6 o'clock in the morning, and furnished with tin cups of coffee and rolls of white bread, which are carried in buckets and baskets to the cells. They then go to prayers in a circular chapel which occupies the dome of the building. From there they march in single file with lockstep to the workshops, and remain employed until 11 o'clock, when they are given a hearty meal of boiled or roasted beef, mutton or some other meat, two vegetables and plenty of bread. At six o'clock they have another meal of lighter food, and for both they sit at long tables, which occupy the center of each corridor. Each prisoner has a tin cup, a tin plate and a knife, a fork and a spoon. The waiters, the cooks and all other attendants are prisoners detailed for that duty. The commissioners say the food is so good and so abundant that it is a great temptation for destitute and lazy criminals to commit crimes that will send them back to an institution in which they are much better clothed, fed and cared for than when at liberty. This criticism has frequently been made, and the labor unions are now endeavoring to secure an act of congress prohibiting the employment of prisoners on any labor that will come in competition with honest artisans outside.

Over the arched entrance of each corridor and each workshop in large letters are these words:

"SILENCIO. OBEDIENCIA. TRABAJO."

which is the sum and substance of the regulations of the institution: "Silence. Obedience. Industry."

Nearly 80 per cent of the prisoners are Indians, either full-bloods or half-breeds, with a considerable sprinkling of Chinese, who constitute about 50,000 of the population of Peru, and all come from the most ignorant classes. I saw three or four white men who are in for murder. In addition to the regular discipline of the institution the spiritual condition of the prisoners is given careful attention by the monks of the Descalsos, or barefooted brotherhood. The Chinese are attended by priests of their own race. There are three or four Chinese catholic priests in Lima, all of whom came to this country as laborers, were converted, educated and fitted for

the priesthood. They labor among the Chinese population in the city and on the plantations near by, but not exclusively. One of them is connected with a prominent parish church.

The rules of the prison prohibit torture. The means of discipline are solitary confinement, dark cells, bread and water, what are known as the "bars," which keep a man in a standing posture, and the dropping of water upon a stone, which is the most severe of all in its effects upon the nerves and mental faculties, and is only used as a last resort. There used to be a great deal of cruelty in the prisons of South America some years ago, and the police are still guilty of brutal practices, not only upon persons who are arrested for crime, but also upon witnesses who refuse to testify against their friends, and other persons who are arrested, either on suspicion or for the purpose of securing information.

The laws of the country prohibit this under severe penalties, and the chief of police of Lima is now under investigation by the courts for violating them. Some time ago a man of the name of Fidel Carceres, a tailor of Lima, while detained as a prisoner in one of the police stations, witnessed the torture of a woman, and when he was released gave the information to the newspapers, which denounced the authorities for permitting such an outrage, whereupon Carceres was again arrested and confined in a dark cell without ventilation or drainage. He was convicted on some fictitious charge and sent to jail. After his liberation he reported his experience to the labor unions, which took up the matter and preferred charges against the police of Lima for false imprisonment and for the torture of the woman referred to. The chief is now under bonds to appear before the Criminal courts, with several officers who are implicated with him.

Horrible tales are told of outrages inflicted upon prisoners by local police in the country towns and villages, but the national authorities make careful investigations whenever charges are preferred, and punish the guilty severely.

There is a separate prison for women, which is in charge of the sisters of charity.

The chapel of the penitentiary is a noble room of circular

form, with a high dome, and in the center, surrounded by an iron railing, is a well which extends to the guardroom below. That is now covered with an iron grating, because some years ago, while the prisoners were engaged in religious exercises, a mutiny broke out and the guards were thrown over and fell seventy feet upon the pavement below.

The altar is handsomely decorated. Bishop Medina appeared in his richest episcopal robes at the services that Sunday. He was assisted by three monks from the Descalsos monastery, by whom the prisoners had been converted. These monks were types of the best blood of Peru, and in their manners and demeanor they showed their gentle breeding. One of them, Friar Saavedra, is considered among the handsomest men in Peru, and might sit for a portrait of St. Anthony of Padua. He belongs to one of the old patrician families of Lima, and his father was appraiser of merchandise in the custom house at Callao until he was killed by accident several years ago. A packing case filled with explosives was accidentally dropped and cost the lives of six men. Another of the monks was Friar Chaco-Montufar, of an eminent family of Trujillo, which has produced some of the most famous men in the republic. One of his brothers is a general in the army.

These men are highly respected for their piety and their self-abnegation, as well as for their ability and their lineage. They have devoted their lives to the relief of the poor and to work among convicts. Every one speaks in admiration of the devotion of the Descalsos monks to the poor, the hungry and the sick. They sacrifice all their worldly goods when they enter the order and live entirely upon alms. Every day they feed 200 or 300 people at the monastery, which stands on the outskirts of the city, for which funds are contributed by benevolent people who know of the good they are doing. I was told yesterday that Friar Saavedra could raise more money for charity among the wealthy classes of Lima than the archbishop himself, and that when he called upon a merchant or a banker for financial assistance his purpose was never inquired into and his request was never refused.

The charitable institutions of Lima, the hospitals and asy-

lums, are in charge of a commission of laymen appointed by the government, and the attendants are Descalsos monks and sisters of charity. The funds are obtained by subscription and a lottery which has drawings twice a week in Lima and once a week in Callao. Tickets are sold at the cigar stands and at other shops and by peddlers, who are very numerous on the street. They haunt the plaza and other public squares, and are as vociferous and active as newsboys in the cities of North America. Once a week there is usually a grand prize of \$5,000, with smaller prizes in proportion, running down as low as \$10. The drawings are supervised by a committee from the benevolent society, which sits behind a table in a canvas booth and upon a high platform where it can be seen by everybody interested. Ivory balls bearing the numbers are placed in a barrel which swings on pivots. After they are well shaken up the bunghole is opened and an urchin from the street is called up, who thrusts in his hand and draws out the ball which represents the capital prize. The barrel is again shaken up and the other prizes are drawn in order. The successful numbers are announced in a loud voice and published in the evening papers, and the prizes are paid the next day at the office of the society, which occupies a handsome building in one of the principal streets.

Private lotteries are not permitted, although special lotteries for benevolent purposes are frequent, like one that was recently held to raise money to repair the cathedral. The profits of the lottery for the Benevolent Society amount to several hundred thousand dollars a year and pay nearly the entire expense of supporting the free hospitals, asylums and other institutions which are usually sustained by the municipality or the state. The patrons of the lottery are mostly poor people who look for the easy road to fortune. Every ticket is divided into five parts. A whole ticket costs 50 cents, and a single part, which if successful calls for one-fifth of the prize, is sold for 10 cents. Wealthy people patronize the god of fortune as well as the poor, and often buy large blocks of tickets.

The Descalsos, or "barefooted friars," are the most popular of all the religious orders in Peru, because they live lives of

great activity and usefulness, and are really overseers of the poor, inspectors of the prisons, managers of the relief and aid societies, attendants at asylums and hospitals, and are noted for their self-sacrifice and devotion to the sick and the miserable. Most of them are Peruvians, and some of the best families in the country are represented at the Descalsos monastery. They do not preach or carry on any propaganda. When they take the vows they turn into the treasury every article of value they own, transfer to the proper officer all their property, and thereafter live entirely upon alms, which they divide with the poor. They wear frocks of heavy brown woolen material, straw hats and sandals of leather which protect the soles of the feet. The term Descalsos means "without shoes."

Their work is allotted by the father superior, according to their talents and adaptability. Some of them are assigned to the prisons, some to the hospitals and other public institutions, and to various branches of their relief work which they carry on. In the market every morning you will see them going about with baskets collecting contributions from the butchers and bakers and hucksters, which are used to feed the poor, and are always given cheerfully because people know that funds intrusted to the Descalsos monks are never misapplied. They eat the same food they furnish to the hungry that come to their doors, and there is no wine cellar in their monastery. If they ask a friend to dine he must accept their frugal fare, which is usually a stew of meat, with vegetables and fruit from their own garden.

Their monastery, which lies at the base of the mountain San Cristoval in the northern suburbs of the city, presents a striking contrast to other monastic institutions. While the San Francisco, the Dominican and Augustine monasteries are notable examples of ancient Spanish architecture, and are decorated in a sumptuous manner with paintings, carved wood, tiles and other embellishments more or less in a state of decay and dilapidation, with filthy corners and dusty corridors, Descalsos is extremely plain, but as neat as a New England dairy. There are no fine pictures, no gilded altars, no embroidered vestments, no carved oak or silver plate, but everything

is severe, simple and unostentatious. The only attempts at ornamentation that I saw were bunches of fresh flowers placed before the crucifixes and the images of the saints, and these no doubt were the most grateful of offerings. The religious orders frequently receive legacies from rich benefactors, which are invested in the embellishment of their churches and monasteries, and sometimes in profitable property, city real estate or haciendas in the country, but when the Descalsos brothers receive a gift it is turned into cash and expended as needed for the benefit of the poor. They have no property, either as a community or as individuals. If they should be sold out to-day their earthly possessions would not bring enough to bury them, as one of the brothers told me. It is the only monastic order in America that is entirely without property, and depends upon the providence of God from day to day.

In almost every corridor, in the refectory, the reception rooms, the little chapel and wherever the eye may wander, these words are seen:

"Amemos a Dios glorificadose."

which means in English, "Let us love God glorified." On the blank walls are painted other inscriptions of a similar character, so that the minds of the monks may be always directed to their duties. This is a sample:

"Vanidad de Vanidades!
Es lo que el mundo te ofrece
En el trance de le muerto
Como lel humo de sparece."

which literally translated reads: "Vanities of vanities! That is what the world offers you, but in the trance of death it disappears like smoke."

Behind their high blue walls the monks have a beautiful garden where they raise all kinds of fruit and vegetables, grapes, bananas, figs, oranges, pomegranates and everything else that this climate will produce, and their æsthetic instincts have found expression in an abundance of flowers, which are carefully tended and thrive well. They sell vegetables, fruit,

milk, bread and wine. Nearly all the work in the garden is done by the lay brethren under the direction of one of the monks, who is said to be an accomplished botanist, and they depend largely upon it for the food which they furnish the poor. Many people question the expediency of the relief work of the barefooted friars and declare that they are making paupers by offering food to all who apply for it without regard to their necessities; that many families who are able-bodied and ought to work for a living depend entirely upon the monks, which of course encourages other lazy people to imitate their example; but one of the monks explained that they never questioned the motives or circumstances of people who applied to them for relief, but whatever they had they gave with a free and willing hand, depending upon God to protect them from impostors and to see that their labors were rewarded.

"No person was ever refused food at our door," he said, "and we prefer not to investigate the applications that are made to us for relief, because it would take so much time, and in a measure diminish our usefulness. If we were inquisitive many worthy people would starve rather than come to us. Those who furnish us the means of carrying on these charities are satisfied with our methods, and therefore I do not see why others should complain."

And he was right. Public confidence in the integrity and the usefulness of the Descalsos brotherhood is so great that nobody ever inquires into the distribution of the funds that are intrusted to them, and their applications for assistance are seldom denied. When they need money they go to the business men of the city and others who are known to be of philanthropic disposition and ask for what they want, which is generally given them. Sometimes they explain the purpose to which the contribution will be devoted, but usually not.

At 2 o'clock every day there is an interesting spectacle outside the entrance of the Descalsos monastery, 200 or 300 unfortunates—the poor, the sick, the lame and the blind, cripples and consumptives, ragged children and withered crones—gather with buckets and baskets to share in the daily dis-

tribution of food. In the convent kitchen great caldrons of "chupe" or "cazuela," the national dish of Peru, a stew of mutton or beef, with bread and vegetables, have been cooked by the monks, and the nourishing composition is brought out of the gate in enormous copper buckets which are placed in a row. The beggars gather around them, the children in front, then the women and the men, and at a sign from a benevolent old monk who wears a big apron and superintends the distribution they clasp their hands, lift their eyes to heaven, and murmur a prayer of thanksgiving for what they are about to receive. Then they cross themselves and hold out their buckets, which the padre fills with a big ladle.

While he is serving the stew he keeps up a continual round of admonition and reproof. He seemed to know all of his customers, and, while I could not understand what he said, it was easy to tell from the changing expressions upon their faces when he was comforting and when he was scolding them. For the little ones he seemed to have a soft hand and a kind heart, particularly for the "nifias," the little girls, who were pushed aside by the eager throng of boys and women. Occasionally, when some greedy person would interfere with the comfort of others, he would put his left hand upon his hip, and, shaking his ladle in his right, would scold like a schoolmaster. There was a humorous twinkle in his eye, and he occasionally cast a glance over toward our way to see how the group of gringos were enjoying the scene.

After the last drop of the stew had been distributed, and I asked permission to take his photograph, he threw up his hand and declared that it was the last thing in the world that I ought to do. There were handsomer monks in the monastery, he said, and I ought not to waste any films on him.

It seems a little odd to find the religious and patriotic tendencies of the people expressed in the nomenclature of their streets, such as the Street of the Good Shepherd, the Street of the Holy Ghost, the Street of the Mother of Mercy, the Street of St. John the Evangelist, the Street of the 28th of July, the Streets of the 1st of March, the 8th of September, and the 5th of May.

The city of Lima and the city of Cordova, in the Argentine Republic, both claim the honor of having the first printing press in the new world, and both of them were probably established about the same date by the Jesuit missionaries.

One of the great institutions of Lima in former days was the monastery of San Francisco, which was founded simultaneously with the old palace and the cathedral, and has always been the largest and the richest monastic institution in America. When Pizarro came to Peru the chaplain of his expedition was Friar Valverde, a Franciscan monk who led the massacre of Atahualpa's court at Cajamarca, and whose zeal in behalf of his religion was not surpassed by the avarice of the soldiers for plunder. In fact, Valverde was about as active as any of the party, and when anything was going on in the way of either secular or spiritual interest he was right behind his chief. When the city of Lima was laid out he asked for land for a monastery, and Pizarro told him he could have as much as he could pace off in a single night along the banks of the River Rimac, northeast of the locations that had been selected for the plaza, the palace and the cathedral.

Father Valverde was a hustler, as I have said, and he never worked harder than he did that night. Starting from the bank of the river, he went eastward, carrying rawhide thongs to mark his trail, and when the sun rose he had inclosed several acres of the most valuable city lots. The monastery was erected on the corner nearest the palace. From the officers and soldiers of the expedition he obtained large sums of money, in addition to the plunder he had already secured, and the institution was originally laid out upon a magnitude unsurpassed by any of the monasteries of Europe, and enlarged from time to time. Much of the material was sent from Spain, and among other things a quantity of beautiful tiles, with which the cloisters are decorated. When they came there was nobody in the colony to set them. One of the soldiers who had been condemned to death for the murder of a comrade made it known to the monks that he was able to do that sort of masonry, and he kept up the job as long as he could, thereby postponing his execution indefinitely. The work was

very badly done, but the beauty of the tiles has added to the fame of the institution.

One of the legends is that after the first building was finished and a colony of monks had come over from the old world to occupy it, Pizarro was invited down to make an inspection. When he had been shown through the cloisters and cells and the chapel, and had admired everything, he reminded Friar Valverde in a jocular way that the monks had no title to the property, and could not get one until they were able to offer him some compensation. The monk was a diplomat, and, handing Pizarro a cup of chocolate, remarked:

"Here is the price. The Savior Himself said that whoever offers a cup of cold water in His name to the least of His creatures offers it to Him, and I have given you a cup of chocolate."

The walls of the monastery are nine feet thick, made of adobe, and have successfully withstood all the many earthquakes that have visited Lima. The ceilings of the corridors, the cloisters and the chapels were once covered with most exquisite carved oak and mahogany wood, but no care has been taken of it, and it has been gradually falling to pieces for the last 100 years. In fact the whole institution is in a state of advanced decay and dilapidation. The walls of the first cloisters were covered with paintings of more or less merit, which were brought from Europe in the early days and presented by devotees of the Franciscan order from time to time. Until lately no care was taken of them, but twenty-five or thirty years ago one of the friars made falling screens of canvas, which afforded them some protection, but it was too late to save them.

Some years ago I found in the attic of the tower of the monastery a pile of the most remarkable old missals. There is nothing in the British museum, or the Biblioteca of Paris, or the Ambrosian library of Milan, to compare with them, although those three institutions have the best collections of illuminated work on parchment. The age of the missals is unknown, but it is certain that they were made by monks in Spain before the discovery of America, because the decorations are entirely Moorish, and Ferdinand and Isabella issued

an edict forbidding the use of Moorish designs in art and architecture. That makes them more than 400 years old, yet the colors are as brilliant as when they were new.

I secured one of the best examples and brought it home with me in 1885. In visiting the monastery again in 1899 I found that the remainder of these priceless works of art had been entirely ruined by having large sheets of modern music pasted over the illuminated pages. The monk who was escorting me through the convent admitted that it was a sacrilegious act, and deplored it, but explained that the prior cared nothing for art or beauty, and utilized them because the parchment was stiff and easily handled. He informed me, too, that one of the finest of the missals was taken to the United States some years ago, and he understood that it had been exhibited at the World's Fair; but I did not think it advisable to explain who was the present owner, especially when he added that it was the most precious volume in the collection, having belonged to St. Francis himself.

With perfect ingenuousness the monks show visitors the cell in which St. Francis lived, the retreat in which he spent weeks and months of contemplation, a big blue wooden cross fastened to the wall of a little closet where he used to scourge himself and do penance, and a little chapel they have erected in the little room where he died. They have the chair in which he used to sit, his rosary and crucifix, the hair shirt he wore on his deathbed, his coffin, which is covered with red velvet and gold braid, and an ivory model of the ship which carried his remains to Rome, said to have been a present to the monastery from one of the kings of Spain. They tell you that his skull is buried under the altar of the church, they show you the skull of Friar Juan Gomez, a monk who took care of him during his last illness, and point out a well where he performed a miracle a few nights before his death. It appears that when St. Francis awakened from his sleep about 2 o'clock in the morning he was hungry and expressed a craving for fish. Friar Juan explained that he could not get fish at that time in the night, and St. Francis then asked for a drink of water. The monk went out to the patio, dipped the

bucket in the well, and when he brought it up it contained half a dozen beautiful pejerrey, the most delicate fish known to Peru, which correspond with our speckled brook trout.

They have a picture of the deathbed scene of St. Francis painted in oil by a famous Peruvian artist, and a corresponding piece representing his funeral in the plaza of Lima, with the archbishop and viceroy in the foreground, and over the entrance to the room in which he died is this inscription:

"Saint Francis Solano, native of Montilla, in the kingdom of Spain, lived in this cloister. Every day in the morning he used to go with his violin to the orchard to sing hymns, and was accompanied by a vast number of singing birds, resting on his head and shoulders, near a palm tree that was there at that time. He died in the adjoining room that is to-day a chapel, on the 14th of July, 1610, at the age of 62 years."

The monks looked upon me as a hopeless heretic when I explained to them that the real St. Francis, the founder of the Franciscan order, lived and died many centuries before the monastery in Peru could have been founded by his devotees, and they would not yield an atom. They declared that these were the relics of the only genuine St. Francis, and that all others were imitations.

St. Francis Solano, however, was an inmate of this monastery during the latter part of the sixteenth and the first part of the seventeenth century, and was famous for his piety and eloquence as a preacher. He was also a musician of remarkable ability, and it is true, according to history of the time, that when he went into the garden with his violin flocks of birds surrounded him and sung to his music. While he was in the Franciscan monastery the city of Lima and the province of Peru were shaken by disastrous earthquakes. Many people were killed, a large amount of property was destroyed, and the entire population was thoroughly frightened. Friar Solano took advantage of that opportunity to preach to thousands in the plaza from the cathedral steps. He pronounced the earthquakes the judgment of God for the sins of the people, and brought about a universal revival of religion and morals, which caused him to be canonized after his death. His sanctity hav-

ing been established, he was made a saint by Pope Clement in 1675.

There used to be several hundred monks in the San Francisco monastery, but there are now only sixty-six. They have a school for small boys and another for novitiates, who are required to endure much discipline and mortification of the flesh before they are admitted to the order. Through bad management the order has lost a large amount of its property. The government has confiscated more than half the monastery, and used it for military barracks and other purposes, while several sugar estates that formerly belonged to the monks have slipped out of their possession.

Old monasteries are used for all sorts of purposes in Peru. The national library and the Geographic Society occupy the former headquarters of the Society of Jesus. This is one of the most famous buildings in South America, and was considered an ideal of splendor 200 years ago, although now it looks rusty and dusty and smells as if it were older than it really is. The ceilings of carved mahogany are greatly admired. The railway stations are ancient convents which still retain their names. The Oroya road has "Deserparado," which formerly sheltered the Little Sisters of the Poor. The English road has utilized the Convent of St. John the Baptist, and its station is known by that name. Those who go by train to the suburban town of Chorillos take the cars at the Incarnation depot. Most of the schools and military barracks were formerly occupied by the monastic orders.

There is a pretty wedding ceremony in Peru—its origin and the significance I could not learn. Some say it is a Biblical and others that it is an old Moorish custom. It is customary for the padrina or godfather of the groom to hand the padrina or godfather of the bride a tray containing thirteen pieces of money. It may be gold or it may be silver, but there must be thirteen pieces, because Christ and the twelve apostles make that number. The godfather hands the tray to the bride and she hands it to the priest and the priest spends the money for charity.

The only American woman ever canonized was Isabel

Flores, daughter of Gaspar Flores, a Spanish musketeer who settled in Peru after a term of service in the army, and became a miner. His wife was Maria Olive, a native of Peru. Tradition says that the color of the child's cheeks won for her the familiar name of Rose when she was a tottling, and that it clung to her until it was sanctified by the church when she was canonized at St. Peter's, Rome, April 12, 1671. Part of her remains lie in an urn on the altar of the old church of Santa Domingo, which has the handsomest spire I have seen, and part of them are in the chapel of a convent that was erected in her honor, to which they were removed in April, 1886, the third centennial of her birth, and the occasion was one of the grandest demonstrations ever witnessed in South America. It was held under the auspices of the government, the expenses were paid by the public treasury, and it was attended by religious dignitaries from all parts of Central and South America, and celebrated as a holiday throughout Peru.

The remains of Santa Rosa were taken from their resting place and borne in solemn procession throughout the streets. Flowers were scattered upon the pavement over which the cortége was to pass, and from the windows and balconies of the houses hung draperies of silk and velvet. The urn was carried upon the shoulders of Dominican monks, who were followed by a long procession of priests and members of monastic orders, several regiments of military, the fire brigade and members of religious and benevolent societies. Some of the people whose houses fronted the line of procession spread carpets and rugs upon the pavement and from several places white doves were released as it passed by. The urn was taken to the church of Santa Rosa of the Fathers, where it remained all night. The next day it was taken to the cathedral for the final ceremonies. The president of the republic, the members of his cabinet, the justices of the Supreme court, the members of both houses of congress and other dignitaries joined in the procession and followed the remains back to the Church of Santo Domingo. They were again deposited underneath the grand altar, where they had lain for nearly three centuries.

Santa Rosa manifested a deep, religious spirit from her earliest years, and when she was 16 she devoted her life to the care of the sick and the poor, living as a hermit in a little cabin in the center of the city. A model of the cabin now stands within the walls of an unfinished church commenced in 1864 in her honor, and abandoned for lack of funds. It encloses a little garden which the attendant says she used to cultivate, a well in which she dropped the key to an iron belt which she locked about her waist to signify her marriage to the church, and the tree under which she used to talk to the birds in their own language. An iron tablet with an inscription marks the spot where she spent nights in prayer and fasting for the redemption of mankind and various relics are retained of her by the sisters of Santo Domingo, whose lowly habit she assumed. She was only 31 years of age when she died, in 1617. Proofs of her sanctity were established by the archbishop, and in 1625 Pope Urban sent an ecclesiastical commission to Lima to carry out the necessary formalities. Their report was submitted to the college of cardinals, which gave the final sanction, and the ceremony of beatification of Saint Rose of Lima was celebrated by Pope Clement IX.

It is said that the peasant women prefer Chinese for husbands to men of their own race, because of their sobriety, kindness and fidelity. The peasants, or cholos, are lax in the observance of their marriage vows, and domestic obligations rest lightly upon them. If a peasant leaves one place to find employment in another he generally abandons his wife and family and takes up with a new woman as soon as he becomes acquainted. This is the custom throughout the country. The women and children remain as permanent fixtures on the plantations and in the towns, while the men are restless and migratory, and often are compelled to go away because of trouble. But the Chinese are not so fickle. They do not require as much work of their wives and feed and clothe them better, so that a cholo woman prefers a Chinese husband when she can get one, although the Church and the civil authorities are seldom called in to solemnize their relations.

The Chinese have made great progress in that country.

There are two wealthy business firms in Lima whose members were brought out from Canton under contract, and who served their time as coolies. There is a Chinese club and theater and two benevolent societies in the city.

Up at Chicla, one day, we got a glimpse of a curious custom among the peasants. Squatting in the churchyards in a row were ten or twelve women from the mountains, while opposite and facing them were an equal number of surly-looking men, also seated in a row upon the ground, with their backs against a wall. Between the two was a rude cross, held upright by a few stones laid against its base, and the arms were trimmed with artificial flowers. The alcalde of the place explained to us that the men had been brought there upon complaint of their wives for discipline; that they were charged with drunkenness, abuse, neglect and improvidence, and that the village priest himself, representing the spiritual and temporal authority of the parish would sit as a court of cassation to hear the evidence, render judgment and administer correction the next morning at 8 o'clock. When asked what sort of correction would be administered he shook a stout stick which he carried as a cane in his hand and remarked that he would lay that on the backs of the worst ones, while the others would be sentenced to various forms of penance.

Some of the women were young and might have been good looking if they had been properly dressed, but they wore the roughest kind of garments, were barefooted and filthy, and their faces expressed little intelligence.

There is a notable institution in Lima, which you can see from the street cars on the way to the American legation. It is a gloomy-looking old building, with high walls that are painted a bright blue, and is known as the Refugio de San José. Here a married woman may find refuge from a cruel and wicked husband, and here a husband may place a wayward or an incompatible wife, with the approval of the priest, for discipline and religious training to improve her temper and morals. Divorce is unknown except on the rarest occasions when a dispensation must be obtained from the Vatican at Rome; but an unfaithful wife can be sentenced to perpet-

ual imprisonment in the Refugio de San José by the archbishop, when the evidence of her infidelity is made clear to him. The husband, however, is required to pay a certain sum monthly or quarterly to the sisters in charge of the convent for her support.

During her imprisonment a woman is not allowed to communicate with people outside or leave her cell without permission from the mother superior, and is required to perform religious duties several hours a day. If she shows signs of repentance and her husband is willing to take her back, or her parents agree to take care of her, she may be released and return to her home, with the approval of the archbishop. There are a good many stories about women who have been improperly imprisoned in this institution by jealous husbands.

There is no such institution for the discipline of husbands who are unfaithful to their wives. That goes without saying. The woman has always been wrong, ever since that affair of the apple.

XIII

THE REMARKABLE RAILWAYS OF PERU

About thirty years ago there appeared in Peru a fugitive from justice, who had been involved in difficulties which he could not overcome. His name was Henry Meigs, and he was a partner of Ralston, the president of the Bank of California, who drowned himself at the Golden Gate to escape the consequences of his speculations. Meigs had more determination, and, when his losses were discovered, he climbed to the deck of a schooner that was in San Francisco bay, bought her and sailed for South America, bringing considerable wealth and irresistible Yankee enterprise. He landed in Chile and prospered there. He then went to Peru and applied his energy and genius to the development of a railway system which had been projected by President Pardo—the best executive the republic ever had. Meigs sent back money to California to reimburse every one who had lost by his financial transactions, but remained in Peru until he died, the most influential, the richest, and the most famous man of his time in South America. His body lies under a mound and a simple cross at Villegas, two miles from Callao, by the side of the railway track. It has been truly said that the Oroya railroad, which has been counted the eighth wonder of the world, is his monument, and nothing elsewhere compares with it as a triumph of engineering genius and human enterprise.

It leaves the port of Callao at tidewater, and in a distance of 106 miles reaches an elevation of 15,665 feet, where, by the Gallera tunnel, it pierces the summit of Mount Meigs, 2,000 feet higher; then descends into the great plateau between the two ranges of the Andes and follows the valley of the Jauja to its terminus at the little town of Oroya, 136 miles from the coast, and 12,178 feet above the sea.

An oroya is a curious suspension bridge used by the Incas to cross streams that cannot be forded. It is a cable of braided llama hide stretched taut, to which is attached a basket drawn back and forth over the gorge by means of other ropes of hide similar to the car used by the life-saving service to rescue persons from wrecked vessels on the coast. At an oroya that crosses the Jauja river, a little town has been built up, which has become a considerable market for the exchange of products and the entrepot for llama caravans from the interior. This is the present terminus of the Meigs road, which was intended, before the money gave out, to extend to the famous mines of Cerro de Pasco, about fifty-one miles farther. The line has been surveyed, and much of the grading completed, and Ernest Thorndike, an American, has undertaken to build the remainder of the track. At present freight is transported on the backs of llamas.

Shortly before reaching the tunnel of Gallera the road passes the mines of Casapalca, now operated with considerable profit by Backus & Johnston, a firm of enterprising Americans, who have erected modern smelters under the direction of Captain Guyer of Montana. This is said to be the highest smelter in the world, being 13,606 feet above the sea, and Gallera, a little village of about 200 Indians (15,565 feet) is the highest place where steam is used as a motive power. Alta del Crucero, the highest point upon the Puna road to Bolivia, is 14,660 feet. Cerro de Pasco is 14,293, and Cuzco 11,003 feet, but these are not the highest inhabited places in Peru. Vicharayay, 15,950 feet, and Muscapata, 16,158 feet, are thriving mining settlements, and there are tambos occupied by shepherds even higher.

The Oroya railroad cost \$27,600,000 up to the time of the death of Henry Meigs, when it reached only to the town of Chicla, eighty-six miles from Callao. The remaining fifty miles are said to have cost over \$6,000,000, making a total of about \$34,000,000 for a track 136 miles long, an average of \$250,000 a mile, but a considerable portion of that money was expended for purposes other than material and construction. There is a difference of opinion as to the net value of the

benefits derived by this country from the example and methods of Mr. Meigs. He believed that money was omnipotent, and never counted the cost of any purpose upon which his mind was fixed. He plunged Peru into a debt of \$250,000,000, and established a standard of political and commercial morals which was as reckless as the engineering task he undertook in the construction of the Oroya road. When he determined to build a railroad from the ocean through the Andes, no obstacle was too great for him to overcome. He selected his route and applied money and science with equal audacity until he accomplished the task, without regard to the ordinary economies observed in practical business life.

About thirty miles from the coast the track enters a canyon, through which the river Rimac tumbles a continuous cataract of foam from a height of 16,000 feet in a distance of thirty-eight miles as the crow flies. The railway cannot rise as rapidly as the river falls, and therefore engineering science suggested a series of switchbacks, or reverse tangents, where the canyon is too narrow for curves. So the track zigzags up the mountain sides, running sometimes forward and sometimes backward, until the summit is won, so that you often see four or five lines of parallel track, one above the other, like terraces. At several points, to make these grades, it was necessary to bridge the canyons, so a framework of iron is stretched across like a bracket clinging to the mighty rocks.

Nearly the entire distance the roadbed was made by blasting. The mountains are of granite, torn and twisted, rent and shattered by prodigious volcanic upheavals that have taken place there. There is little earth in sight for nearly all the distance, except what was hauled in from the valley below for ballast, and the track rests upon shelves carved in the granite cliffs with drill and dynamite. There are seventy-eight tunnels, whose aggregate length is 36,000 feet, the longest being that of Gallera, which is 3,800 feet in length.

Occasionally the gorge widens, where little villages of Indians are found cultivating the silt that has been washed down from above. But they get very little sunlight within

those mighty granite walls, that are seamed and wrinkled like an old man's face, and broken here and there by furrows that have been made by the falling water when the winter snow melts on the mountain tops. The rainfall is insignificant, but occasionally nature indulges in a dramatic performance which leaves horror and devastation in its wake. A few years ago the Verrugas bridge, a beautiful piece of ironwork which spanned the chasm, was suddenly washed away by a cloudburst, which came without warning, and in a few moments was gone, but the force of the water was so great as to carry away a structure that cost nearly \$1,000,000 and was rooted in the eternal rock.

The bridge was replaced at a heavy cost the next year, the material and the men being brought from Trenton, and nearly all of them died from a mysterious disease known as the Verrugas, because it is peculiar to that spot in the valley through which the bridge is erected. It is found in three or four other similar localities in the mountain gorges, but here it attacks every unacclimated person, usually with fatal results. Captain Phelps, who was United States minister to Peru during the Arthur administration, and Lieutenant Nye, his naval attache, both died in 1885 of the disease, which they contracted while on a hunting expedition along the Oroya road.

It is a disease of the blood. The first symptoms are fever and pain in the back of the head, with a terrible thirst after a few hours' delirium. The veins begin to swell the second day and an eruption follows; the distended blood-vessels, breaking, run into each other and form swellings along the veins and arteries, in which the poison seems to be concentrated. If these swellings appear during the earlier period of the disease they can be tapped and the poison released, but if it remains in the blood the result is fatal. The disease is contagious by contact. Physicians say that it is caused by a germ that can be inhaled or absorbed into the system with food or water, and can be communicated through the saliva. Its origin is supposed to be in the decomposition of the soil in the Verrugas valley, and one or two other points in Peru.

About two years ago a young doctor of Lima, named Car-

tion, attempted to solve the problem and inoculated himself with blood taken from the veins of a man who was suffering from the disease. His purpose was to study the symptoms upon himself and the effect of various remedies, but shortly after the first symptoms appeared he was delirious, and died in a few days. The medical fraternity in Peru erected a monument to his memory as a martyr to the cause of science.

Every man employed in the erection of the Verrugas bridge, except a few Indian laborers who were native to the valley, was seized by the disease, although the water they drank and used in cooking was all brought from Lima and extraordinary precautions were taken to protect them.

There is another disease called "sirroche," which attacks persons who remove rapidly from a lower to a higher altitude. This prevails throughout the Andes, and although it is seldom fatal, it reduces the vitality of delicate persons so that other diseases of a more serious character develop. Sirroche is attended with dizziness, cold hands and feet, nausea and a rush to the head of blood, which often bursts from the nostrils and ears. There is no cure for it any more than for seasickness, and persons who are attacked simply have to lie down and endure it until they can be taken to lower ground, where they soon recover their normal condition.

It is estimated that the construction of the Oroya railroad cost Peru 7,000 lives from pestilence and accidents, landslides and explosions. The cost in human life was no obstacle, however. When a sufficient number of peons could not be obtained Chinese coolies were imported.

Throughout the entire gorge it was necessary to lower men by ropes over the edges of the precipices to drill holes in the rocks and charge them with blasting powder in order to get a place to stand on, and this reckless method of construction was attended by frequent casualties. A curious accident occurred at a place called Tambo de Viso Puente. The water for the construction hands had to be brought down the valley in pipes and a plumber was soldering a leak when a caravan of burros loaded with powder came up the trail. One of them rubbed against the plumber, who impatiently struck at the

animal with his hot iron, which, in some way, came in contact with the powder and caused an explosion that blew a gang of 300 or 400 workmen and the entire train of burros over the precipice into a chasm 3,000 feet below.

The scenic grandeur of the Andes is nowhere more impressive than along the canyon of the Rimac River, through which this railroad runs, and one can obtain here better than anywhere else an idea of the struggle which the Incas made to sustain themselves among these inhospitable mountains. A survey of their remains justifies the estimates that have been made of their enormous population, and the people who for centuries herded in these narrow valleys left traces of industry and patience which have a pathos as well as a deep ethnological interest. They built their dwellings upon the rocks and carried their dead to be buried in the desert on the sea coast in order to utilize every inch of soil in the mountains for agriculture. They terraced every hill and mountain side like the steps of a mighty stairway. They filled with soil every crevice in the rocks and brought guano from the islands of the sea to fertilize their hanging gardens until not an inch of surface that could grow a stalk of maize was left unproductive.

Their irrigation system shows engineering skill as great as that which made the Oroya railroad famous. Their acequias, which carried water to the thirsty crops for 1,000 years, are still visible in every direction, and some of them are yet in use by the Indians, who grow corn, wheat and potatoes on the mighty slopes. The ditches cling around the hills, sustained by walls of masonry and are frequently carried through tunnels. Dams and reservoirs were erected to collect the water that filtered down from the melting snows, and it was distributed by regulations similar to those that govern the present generation.

In this struggle for existence the Incas established and sustained a government by which the equal rights of every human being were recognized. By the logic of nature the sun, which rarely penetrates this gloomy canyon, and the great sea, which impressed the dweller in the mountains with reverence and awe, were looked upon as the sources of life and

happiness, and they, with the Creator, were deified in a trinity before whom the empire bowed.

Out in the Rocky mountains we often hear of the difficulty of "farming the scenery," but in the Rimac valley such enterprises were not found unprofitable by the Incas. Their little farms stood on end in many places and hung with such narrow margins that we wonder the mighty winds which sweep down the gorges did not blow them away. Although the mountains look so brown and bare, they are not denuded of all vegetation. The hoofs of goats and burros hunting for food on the hillsides have produced an effect which suggests the wrinkles on an alligator skin, and a number of wild flowers modestly contribute to the decoration of the rugged landscape. Pink marguerites, wild heliotrope, foxglove, ragged robins, mustard flowers, buttercups, wild geranium, which the natives call *maniarillon*, the old-fashioned lady slipper, which they call *cancelleria*, and a beautiful lily which appears on St. John's day and is called *amancaja*—all these can be found in the most unexpected places, smiling as cheerfully and shedding a perfume as sweet as they might offer in the most encouraging surroundings.

About thirty miles from Lima a little town called Chosica has become famous as a health resort, and is much sought by people of the city in both summer and winter because of its even and delicious temperature. Fifty miles farther on, and 8,000 feet above the sea, is Matucana, another favorite stopping place for invalids, where the atmosphere and the temperature are said always to be the same. There are several smaller towns at intervals, from which wool, ore, vegetables and other produce are shipped to Lima, but the railway could never be made self-supporting by its local traffic. It is useful and necessary for the transportation of merchandise and minerals between the mining settlements in the interior and the sea, but the cost of maintenance makes dividends impossible.

About ten years ago a syndicate of capitalists organized by Michael P. Grace of New York and Lord Donoughmore of London, assumed the entire foreign debt of Peru, which amounted to several hundred million dollars, and received as

compensation a lease for sixty-six years of all the government railways, with a mileage of 810 miles, which cost nearly \$87,000,000, with the stipulation that the syndicate would improve and extend them by at least 350 miles. In addition to the railways the corporation obtained a similar lease of the docks at all the principal ports except Callao, the exclusive right of navigation on Lake Titicaca, all the guano except that on the Chincha Islands, and the privilege of working the famous Cerro de Pasco mines, which have the reputation of being among the richest in the world. Peru agreed to pay an annual subsidy for thirty years of \$400,000 gold, which was to represent the interest upon money borrowed by the corporation for the repair and extension of the railroads.

The syndicate redeemed the bonds of the government that were outstanding and released Peru from all its foreign obligations. It took charge of the railways and immediately added twenty-five miles to the southern road toward Cuzco, and extended the famous Oroya road from the town of Chicla to Oroya, thus giving an outlet to the famous Casapalca mines, operated by Backus & Johnston, formerly of Cleveland, Ohio, who have erected an extensive modern smelter near by; but no further railway construction has been carried out as stipulated in the contract. Now the Peruvian corporation and the government are in a stubborn quarrel, each claiming that the other has failed to observe its provisions and has been guilty of bad faith.

The Cerro de Pasco mines were worked by the Jesuits and yielded hundreds of millions of dollars under the most primitive methods of extracting and reducing the ore. They were discovered by an Indian shepherd who felt cold one night while he was watching his sheep and piled together a few stones under the lee of which he built a fire. In the morning he noticed that the heat had melted one of the stones and a glistening substance had appeared upon it. He took it home and showed it to the priest. The priest took charge of the sample and from 1630 to 1824, while the records were kept by the church, that Indian's accidental discovery resulted in the extraction of 27,200 tons of pure silver

The ore is not in fissure veins, but is similar to the carbonates of Leadville, and experts claim that they can work it for \$3 a ton. The value of the tailings which the priests and Indians left during three centuries is said to be from \$40 to \$100 a ton, if they could be reached by machinery, or facilities for transportation.

A large part of the Cerro de Pasco district is now occupied by native miners, who are pegging away in the old-fashioned way, losing as much as they gain, and securing about one-quarter of the profit they might enjoy if they could have the use of improved machinery. There are also a number of old mines which were worked by the Jesuits during colonial times and afterward by the government, but have been given up since silver became so abundant elsewhere and have been allowed to fill with water. It is estimated that \$750,000 would clean up the old mines and put them in working order, but it is useless to spend money there without a railroad to haul in the machinery and haul out the ore, or the bullion.

There is no limit to the mining possibilities of Peru. The mineral deposits have never been measured, but everybody concedes that the country is, in all sorts of precious and useful metals, beyond comparison. But Peru will never be anything until it has transportation facilities. The burro may be a good pioneer, but he is not a success in handling a heavy traffic. Although trains of burros compete with the railroads in this country in carrying ore down and other freight back into the mountains, a distance of more than 100 miles and more than 250 miles in Bolivia, across the sandy desert, where it is fifty or sixty miles between drinks, they will never build up an empire such as should exist on this coast. It takes three weeks, I am told, for burro trains to go from Cerro de Pasco to Callao laden with ore, yet they compete with the railroad which lacks sixty-three miles of completion. The ore is now carried over that interval on the backs of llamas.

The rainless region, the desert strip, which lies between the Andes and the ocean along this coast, is cleft at intervals by narrow little valleys, down which the melting snows from the mountains find their way and bring fertility with them.

The valleys are separated from each other by ranges of foothills that support the main chain at right angles like a series of buttresses, and by trackless deserts which are shut in on all sides except where they run down to the sea. In several of these valleys are railroads running into the interior for a distance of from twenty to fifty miles. Most of them were built under the direction, or at least the inspiration, of Henry Meigs. He succeeded in stimulating the national pride and enterprise of the people, and in inducing the government to borrow \$250,000,000 or more to build railroads. The construction bonds were sold at various rates, often at a discount of fifty per cent, and a good deal of the money was stolen. Most of the locomotives and rolling stock were bought in the United States, but have not been renewed for many years, and are, generally speaking, in a bad condition. The locomotive which hauled us up the Oroya railroad, for example, was built in Paterson, N. J., in 1875.

The first of the little spurs of railroad which run into the interior from the sea connects Paita and Piura, in the northern part of the republic, through a very fertile valley, which is well watered and produces large crops. Engineers claim that this line would furnish the shortest route to the head of navigation, on the Amazon, and several surveys have been made. It is asserted that the American gunboat *Wilmington*, in its recent voyage up the affluents of the Amazon, reached a point in Peru, that is less than 200 miles from the Pacific ocean. The extension of the Paita & Piura railroad over the Cordilleras probably would be comparatively easy.

It has already been demonstrated that a superior grade of coffee can be produced upon the Atlantic slopes of Peru, and within five days' ride on a mule from the terminus of the Oroya road is a colony of Europeans, mostly Germans and Englishmen, who have set out large plantations and are said to be doing well. They are remote from civilization and in the midst of a wilderness, but the climate is said to be good and the soil adapted to the production of coffee similar to that of the Yungas valley of Bolivia, which is claimed to be the best in the world. But that industry, like mining, will

never become important until transportation facilities are provided.

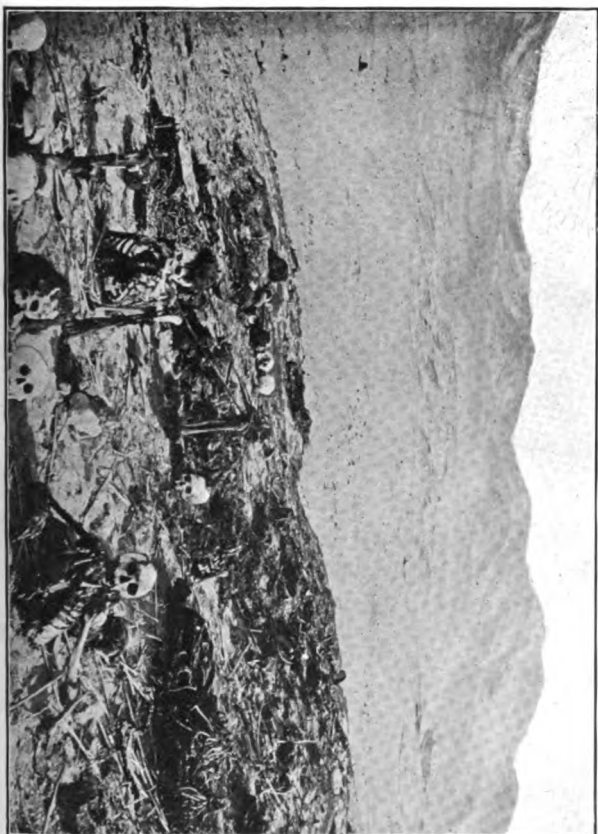
Railroad construction is, of course, very expensive. Labor is cheap, but scarce. They pay fifty or sixty cents a day in silver for construction hands, and very good ones, but on the desert coast grading is extremely difficult because of the shifting sands, and when the railway builders get into the mountains they have to cut their way through stone.

XIV

THE MECCA OF A PREHISTORIC RACE

About twenty miles south of Lima, in the midst of the desert that lines the coast, are the ruins of the ancient temple to Pachacamac, the Christ of the Incas. According to their theology a supreme being called Con, without human form or material body, but an invisible, omniscient and omnipotent spirit, created the world, elevated the mountains, excavated the valleys and filled with water the rivers and the ocean. He gave life to mankind and provided human beings with all things necessary for their well being and happiness. Thus, blessed abundantly with the gifts of providence, the world remained happy for ages, until the human race became vicious and corrupt. Con, enraged because of this disrespect and ingratitude to himself, turned the fertile fields into sterile deserts and condemned his' creatures to misery, until Pachacamac, the son of Con, appeared upon earth, took charge of the government of the world, re-created and restored all that had been condemned by his father and was welcomed as a redeemer. New generations raised sumptuous temples in his honor upon the edge of the sea and there worshiped him with an idolatry that has seldom had a parallel in human history.

The worshipers of Pachacamac never invoked his name without throwing themselves upon the ground, kissing the earth, and making manifestations of adoration and self-abasement. This temple of Pachacamac was the only one throughout the entire country dedicated to that supreme being, and pilgrims from all parts of the empire were constantly passing to and from that sacred place as the followers of Mahomet go to Mecca. Indeed, it was considered the duty of every inhabitant at least once in his lifetime to offer sacrifices and worship at Pachacamac, and to be buried in the neighborhood



The Golgotha of Pachacamac.

of the temple was the supreme ambition of all believers. Around the temples and palaces of the Incas were enormous *tambos*, or hotels, for the entertainment of pilgrims, and on the roads leading from different parts of the empire similar accommodations were provided by the government.

Immense buildings, now in ruins, were occupied by priests and women who dedicated their lives to the service of the god, and many nobles and princes erected stately structures in the neighborhood, which they and their friends could occupy at intervals when they came to offer their veneration to the omnipotent deity of their religion. Thus the city of Pachacamac was not only the Mecca but the Rome of the Inca world, an assemblage of spacious edifices which were adorned with enormous wealth and offered an alluring temptation to the Spaniards, who learned of its magnificence shortly after their arrival in the country.

Francisco Pizarro sent his brother Hernando down there from Cajamarca to make an investigation and seize whatever treasure he might find. Messengers were dispatched by the Indians in advance and the priests, being thus warned, were enabled to remove a considerable portion of their treasure, but sufficient remained to satisfy the avarice of the Spaniards for the time being, and extraordinary stories are told of the amount of silver and gold that was carried away by Hernando after he had destroyed the temples and the palaces. The chroniclers who accompanied the expedition declared that his booty was twenty-seven *cargas* of gold—a *carga* was sixty-two and one-half pounds—and 16,000 ounces of silver, all that 400 men could carry in packs upon their backs. It is said also that the priests were able to conceal 400 *cargas* of gold and 82,000 ounces of silver. Quintero, the pilot of the expedition, asked as his share of the booty the nails which were used to fasten the plates of gold to the walls of the temples and palaces, which were granted to him and amounted in value to 4,000 marks.

The ruins of Pachacamac remain very much as Hernando Pizarro left them after he despoiled the temples and palaces and robbed the inoffensive priests of their treasure, and they

are the most accessible as well as one of the most interesting examples of Inca architecture.

We took an early start. The bells were clanging for early mass from the church towers in all directions as we left the hotel about 6 o'clock and hurried to the railroad station. They do not ring bells with ropes as we do in North America, but pound them with hammers and make such a racket that a stranger would suppose that all the world was on fire and that the bell-ringers were trying to alarm the people. The streets were full of laborers and servants hurrying to their work, but no carriages or street cars were out so early, and we had to walk to the station, where we met Mr. Dudley, the American minister; Mr. Niell, the secretary of legation, and Dr. Max Uhle, the famous German scientist, who has been engaged for years in the investigation of Inca archæology and spent ten months at Pachacamac in 1897 in the interest of the University of Pennsylvania. He has recently returned to Peru as the agent of the American Exploration Society, and will make another collection of antiquities for the University of California.

We took tickets to Chorillos, the Newport of Peru, and passed the little suburbs of Miraflores and Barranca, fashionable summer resorts for the rich, and the country seats of the mighty. Barren and unlovely is the naked soil that lies between the railway and the ocean, and the mud walls that divide the fields add to the dismal picture. But wherever the soil has been moistened trees and shrubs and flowering plants, fruits, vegetables and eager vines spring up with tropical luxuriance.

We passed the parks, the botanical gardens, the zoo, the rifle range and the polo grounds, whose walls are hung with flowers. We saw ruins of ancient structures with thick adobe walls, the same color as the earth, which Professor Uhle told us were the castles of the nobles who ruled these parts before the Spaniards came. We saw much evidence also of the war with Chile. Nineteen years have not erased the traces of that awful struggle. Roofless houses, rifle pits and fortifications still remain and a monument marks the place near Miraflores

where the Peruvians made their last stand against the invaders from Chile; where, after the army had been conquered and scattered at the battle of Chorillos, merchants and lawyers, clerks and mechanics, priests and monks—every one who could get a gun—came out from Lima and assisted in the defense of the city. Before reaching Chorillos we pass a handsome new building surrounded by high walls, with towers for sharpshooters, which is the national military school, in charge of Colonel Perreau and two other officers of the French army, who were detailed as instructors by the president of France at the request of the president of Peru.

Chorillos is a pretty place as Spanish towns go, but there is no difference in the arrangement of the houses at a summer resort and those of a city. The streets are lined with dead walls and iron gates, through which you can get a glimpse of attractive interiors, but the beautiful part of a Peruvian home and the luxury enjoyed by wealthy people is hidden from strangers and revealed only to the knowledge of intimate friends.

The casual observer is inclined to the opinion that people here and in other Spanish countries do not know what comfort is, but the old residents rebuke such presumption and explain that centuries of experience have demonstrated that the style of architecture you find there is much better adapted to the climate than such villas as we admire at the summer resorts in the United States. Man has adapted himself to nature, and what will answer for one section of this great universe will never do in another.

Saddle horses were to have met us at the railway station at Chorillos on the arrival of our train, so that we could get an early start across the desert, but we were doomed to the exasperating experience so common to those who deal with Latin-Americans. We had to wait two hours before the animals were ready, and there is no telling how much longer our departure would have been delayed had it not been for the energetic efforts of Colonel Perreau in our behalf.

Some people told us it was twelve miles from Chorillos to Pachacamac, others said it was fifteen and others twenty.

Spanish miles are of irregular length, but always very long, and their measurement depends upon the politeness of your informant. It is one of the amiable customs of the country to give pleasant information regardless of its truth, and when a caballero tells you it is only six miles to the next hacienda, when it is really ten, he excuses the falsehood on the ground of your tired appearance and your anxiety to reach your destination as soon as possible. But, whatever the distance of Pachacamac may be, it is a hard journey, varied by natural phenomena which divert the attention of the traveler.

We followed a dusty highway along the base of the naked hills which surround Chorillos, with the dust four or five inches deep, until we reached the sugar plantation called La Villa, an extensive affair with several thousand acres in cane, a fine plant of machinery from Philadelphia, a narrow-gauge railroad to carry the sugar to Chorillos and a massive aqueduct of stone to bring water from the hills near by to make the wheels go round. A most gracious haciendado opened the gates to let us through, and after crossing a slimy savanna covered with white alkali, where a few cattle grazed, we reached a broad beach, upon which the surf rolled with greater majesty and might than I have ever seen before. The spray leaped high into the air when each receding wave met a new arrival, and great billows of foam followed each other in quick intervals with a roar that made conversation difficult. Here the Pacific ocean is widest and an unbroken area of water stretches for nearly 8,000 miles, a long journey for waves to travel, and they therefore had a right to announce their arrival with more than ordinary sound and ceremony. It is no wonder, too, that the innocent aborigines were so impressed with the grandeur and the magnitude of the ocean that they worshiped it as a god.

We disturbed a mass convention of pelicans that had gathered on the beach—wise-looking old chaps with long bills that reminded us of South American hotel-keepers, and an air of solemnity and deliberation that cannot be approached by any other bird except a goose. There were thousands and thousands of them, and they darkened the air as they stretched

their wings and went clanging out to sea; but they wouldn't move till we were close upon them, and regarded us with evil eyes. Beautiful gulls with black wings and soft white breasts mingled with the pelicans, and myriads of ducks, which formed triangles when they flew away and retained that marching order until they were out of sight.

At least ten miles of beach was traversed. An ocean of blue water on one side, and an ocean of drifting sand upon the other, which lay in windrows as the wind had left it, and for a background there was a long repulsive mountain, which looked as if it were made out of dust, with here and there rocks protruding from the sand like the elbows of a pauper through a worn-out coat. Then we came upon a little oasis—a clump of bamboo and date palms surrounded by grassy slopes, cane and fields of sugar cane and corn, which were watered by a little stream that was able to reach the sea. Beyond it rose a group of three hills, covered with rambling ruins, the highest, 458 feet above the level of the sea, being surmounted by the ancient temple of the sun. Nearer, on an intervening eminence, were the remains of a temple to Pachacamac, which Dr. Uhle told us was erected centuries before the Incas overcame and subdued the ancient race that inhabited this coast before them. We can learn very little about that people or the period in which they lived, but we know that with cunning diplomacy the Incas exercised their intellectual superiority and grafted their own religion upon that of the nation which they absorbed into their body politic. The Spaniards say that the priests of the primitive faith were corrupted by the Peruvian monarchs, who caused to be constructed this temple, dedicated to the sun, which was adorned in the most sumptuous and ostentatious manner and decorated with treasures whose description makes us wonder how such a simple people could have amassed such wealth in this inhospitable desert.

There is a striking parallel between the powers and the attributes of the emperor of China and those of the ruler of the Incas, as their traditions bear a distinct analogy to the Mosaic account of the origin and early history of the human race.

At the foot of the hills we saw, half concealed by sand, the crumbling walls of edifices which were erected a thousand years ago for the shelter of pilgrims who came from the distant provinces to present their offerings to Pachacamac. Nearest the sea was a convent of the virgins of the sun, which, according to the accounts of the Spanish invaders, was richly furnished and adorned with great taste. The women who lived there were dedicated to the sun; they were the wives of the god and preserved the greatest seclusion in their cloisters, so that not even the king himself could enter the precinct of their monastery—a privilege that was only enjoyed by the queen and her daughters. Under the direction of competent mistresses these wives of the sun were taught the duties of their sacred office. Their occupations were spinning and weaving robes for the royal family and vestments for the priests of the finest vicuna wool, in the most brilliant colors, and embroidered with gold and precious stones. They also brewed the chicha, a beverage which was extensively used in the ceremonies of the temple, as well as in the festivals.

The great palace of the Inca, upon the crest of a hill, is roofless, but its walls, which are eight or nine feet thick, have made a heroic resistance against time and decay for four centuries since the Spaniards stripped them of their splendors. The streets that led to it can be easily traced and the watch towers which guarded the zigzag entrances are almost perfectly preserved. In the center of the palace is a great hall, perhaps a hundred feet long by fifty in width, where the ceremonials and the banquets of the court are supposed to have taken place. From descriptions given of this apartment by the chroniclers of early times, it must have been magnificent. The door was of gold, Dr. Tschudi says, richly inlaid with precious stones and coral, and at the western end, toward the sea and facing the rising sun, are three platforms or terraces upon which the emperor, the high priests and other dignitaries used to preside over the festivities.

Behind this great room are the quarters in which it is believed that Hernando Pizarro was entertained before he disclosed his cruel purpose. Surrounding the palace are many

buildings of more or less magnitude, and there are a series of half-ruined walls showing that Pachacamac was laid out in a manner similar to Pekin, one city within another.

The area unoccupied by buildings was used for burial purposes, and a vast cemetery extends indefinitely in all directions. Faith in the immortality of the soul was one of the fundamental principles of the Peruvian religion. The aborigines believed that after death the just went to a beautiful and pleasant place, like the heaven of the Christians and the nirvana of the Hindoos, while the souls of the sinful were tormented in another place, but both pursued the same occupations after death that they followed while living. The theory of a resurrection of the body induced them to preserve the dead with great care and to bury with them the utensils and ornaments which they used in life. Taking advantage of this custom, archæologists and treasure-seekers have excavated a large area in search of gold and silver ornaments, vessels of pottery and other interesting objects which the graves contain. The place is a drear and repulsive Golgotha, covered with skulls and bleached bones, broken pottery and cerements which have been stripped from the mummies. There is no telling how many millions were buried here, but the bodies lie in layers and very close to each other, for it was the ambition of every individual in the great Inca empire to have his bones lie in this consecrated ground.

The mummies are buried in a sitting posture, with the knees under the chin, and are wrapped in bundles with a network of rope around them very skillfully done. Some of the wrappings are fine fabrics of cotton, which have not lost their luster during the centuries they have lain in the soil. Earrings, bracelets, anklets, necklaces and other ornaments of silver and gold are frequently found, so frequently as to induce many persons to make a business of digging up the cemeteries and robbing the dead. They located the place where the rich were laid, and that portion of the cemetery has been thoroughly explored.

Both the sea and the desert have encroached upon the ancient city. A considerable portion of it has been buried

under the drifting sand, and in 1586 an earthquake separated from the mainland a noble promontory, which now, gray with guano that cannot be reached because of the surf, stands as a silent sentinel guarding the remnant of an extinct civilization. The vast plain, covered with roofless ruins, bears mute but impressive testimony to the thorough manner in which the Spaniards subdued the country. We ate our luncheon under the shade of the walls of the Temple of the Virgins, and a daughter of the Incas brought on her broad back a bundle of juicy cane, bound with a rope, to feed our horses.

The coast of South America has been called a panorama of desolation, being a constant succession of bleak and barren cliffs, with scarcely a lovely thing for 1,500 miles. Occasionally a stream makes its way from the mountains to the ocean, and leaves a line of green that is perpetual and a fertility that is unsurpassed. Such a place is Pisco, the first stopping place of the steamer south of Callao, where a little river irrigates a broad valley that produces some of the finest grapes in the world. From Pisco come the wine and brandy that bears that name and the famous cordial called "Italia," which is unsurpassed as a stimulant; but the quantity produced is so small that it is scarcely sufficient for local consumption and does not find its way into the world's markets.

Near Pisco an Italian colony has recently been established, which will extend the cultivated area a considerable degree, and there is no limit to its productiveness wherever water can be brought to the soil.

There is no harbor along the coast until you reach Coquimbo, the first port north of Valparaiso. At all the other places the steamers are compelled to anchor in an open roadstead out beyond the surf and passengers and freight are transferred by means of lighters through the breakers in a manner that looks desperate and dangerous, but is seldom attended with accidents. Human beings and packages of merchandise are hoisted from the lighters to the decks with cranes and tackle, and the experience of landing is not such as to encourage nervous and timid people to cruise up and down this coast. The seasickness in the lighters is also much

greater than upon the steamers, and passengers who are lucky enough to be able to remain on board are furnished with exciting and sometimes distressing spectacles at every port.

At some ports iron moles or piers have been extended into the water beyond the breakers, which make embarkation more comfortable and less dangerous, but at almost every place you wonder what possessed people to start a town at such an inconvenient and uninviting location. This problem is solved by a short journey into the interior, for, hidden by the foothills back of each of these little ports, is a fertile and productive valley from which sugar, rice and other agricultural staples are shipped in large quantities, and often trails lead out to mines of copper, silver and antimony in the neighborhood, which yield ore so rich that it is sent to London in bags like coffee or corn.

On the face of a great rock which rises from the ocean south of Pisco and shows a smooth and unbroken surface to the western sun is carved a representation of an eight-armed candlestick, about 100 feet high and fifty feet across from end to end of its longest branches. It is perfect in symmetry, and is said to be carved in lines about a foot deep and a yard wide. When and how this phenomenon occurred no one can tell. It has been there since the Spaniards came to this country, and of course superstitious people attribute its origin to a miracle. One of the stories is that St. James dropped it when he came to Peru to assist Pizarro and the conquistadores in driving the Incas out of their ancient homes.

Sometimes, when there has been a strong wind over the desert, the candlestick is covered with the drifting sand, and the padre in the nearest village goes down with a lot of Indians to dig it out.

According to official statistics in the archives of the old palace in Lima, the value of the silver produced in Peru between 1630 and 1803 was \$1,232,000,000. The mines of Hualgayoc, Huantajaya and Cerro del Pasco alone yielded \$849,445,500 during that period.

The deposits of guano found along the coast are almost as valuable, and the shipments from the Chincha islands during

the nine years between 1851 and 1860 were 2,860,000 tons. In 1875 the guano exports amounted to 378,683 tons and were valued at \$20,000,000, and the nitrate beds, which have been worked in the province of Tarapaca since 1830, have yielded equal wealth. In 1875 the exports were 326,869 tons, in 1878, 269,327 tons. In 1880 the exports were 240,600 tons, in 1881, 385,984 tons, and in 1882 they reached the enormous total of 535,151 tons.

The average annual shipments were valued between \$25,000,000 and \$30,000,000, and this was a clear profit to a population that never reached 2,000,000, and three-fourths of whom were Indians, who had no share in its benefit. It was an epidemic of riches, and instead of wisely hoarding her sources of wealth and protecting them, the government of Peru, like the people, plunged into a career of reckless extravagance that has no parallel in national history. The exhausted lands of the old world required fertilizers to revive them, and their owners paid high prices for what cost Peru nothing.

Guano is found only in rainless regions. There are said to be some deposits on the coast of Mexico and among the islands of the Gulf of California, but they have never been worked with much profit, and it is along the arid deserts west of the Andes where the rain never falls, that the greatest wealth has been derived from this peculiar source.

Guano is a mixture of the excrement of birds and seals, the decomposed bodies of both and the bones of the fishes which they have taken upon the land for food. Along the coast of Peru to-day are millions of sea birds whose progenitors have been there for centuries. The sky is often darkened with them, and they cast a shadow upon the ocean's surface as they fly between the islands upon which they roost and feed. These islands are swarming with seals also; the rocky shores are fringed with multitudes of them beyond the power of man to number. Their fur is of no value because of the warm climate of this latitude. They live on the islands with the birds. Here they both feed and die and decay with other animal life which they bring from the ocean. There have been no rains to wash it away, and the wind

scarcely ever rises above a gentle breeze, so that it was allowed to accumulate for ages, until in some places the deposits were hundreds of feet deep, dried and baked by the tropical sun.

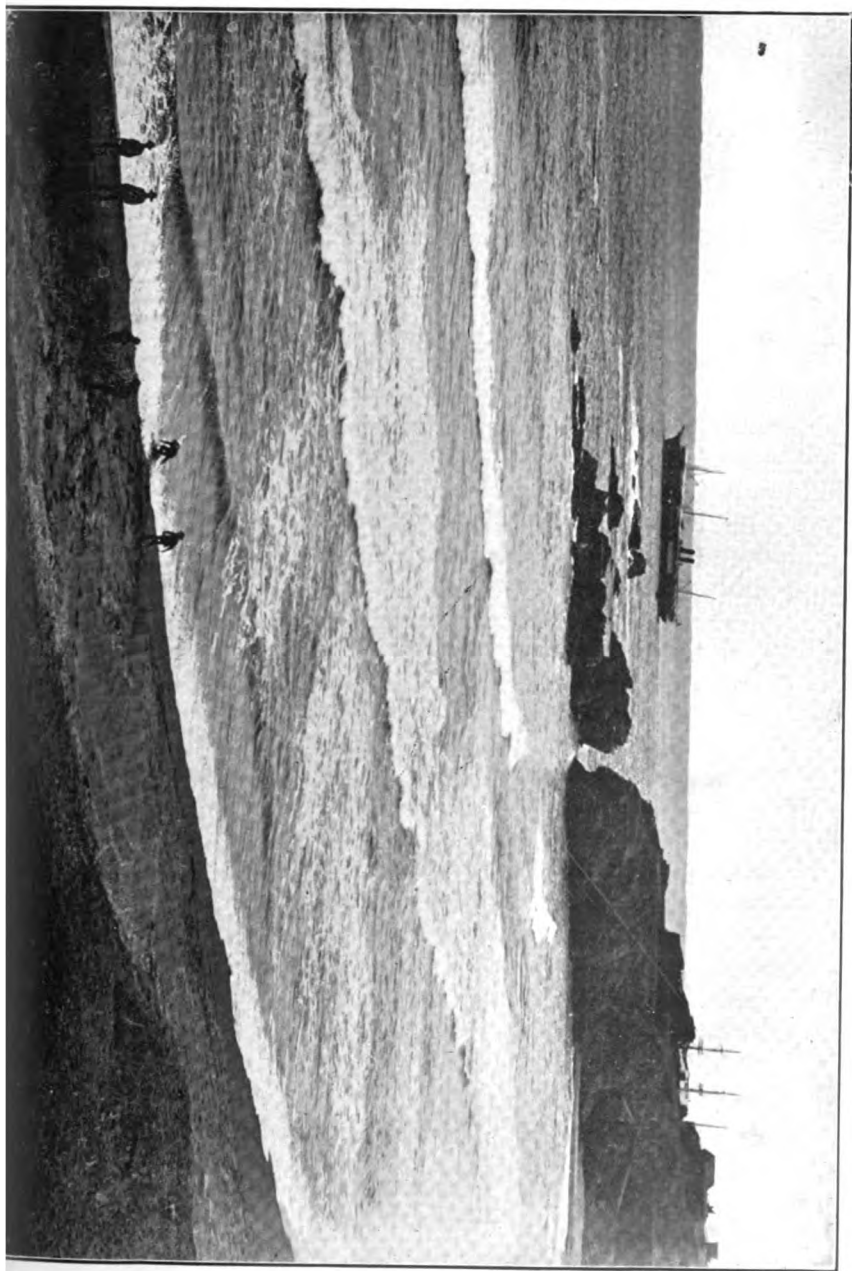
The amount of money Peru gained from her guano deposits cannot be estimated more accurately than the value of the plunder which the Spaniards obtained in the Inca palaces and temples, and had it been carefully husbanded it might have been a perpetual source of wealth, making taxation unnecessary, providing means for the development of other material resources and paying the cost of internal improvements and for the education of the people, which is necessary for the healthful life of any nation. There never was a country more bountifully blessed by nature with an easy road to riches, but the greater part has been squandered, and comparatively little remains, which is now being shipped to Europe at the rate of 30,000 or 40,000 tons a year.

XV

OVER THE MOUNTAINS AND DESERTS TO BOLIVIA

There are two ways to reach Bolivia. A narrow-gauge railway runs from the port of Antofagasta across the desert and over the mountains to the mining district, of which Oruro is the capital, and there is a standard-gauge road from the port of Mollendo, called the Southern Railway of Peru, via Arequipa, to Puno, on Lake Titicaca. There you take a steamer for the little town of Chillilaya, on the southern shore of that remarkable body of water. There a stagecoach of a primitive character carries passengers to the city of La Paz, the most progressive town and the present capital of Bolivia. The stage ride is forty-five miles over a road that is fairly good, and it is made with comparative comfort, teams of six and eight mules galloping the entire distance at the top of their speed.

It took a great deal of nerve to build the road to Puno, but it was American nerve and American genius that overcame the Cordilleras and the deserts and found a path through the gorges and along the mountain sides in a manner that will always excite amazement among ordinary people and admiration among engineers. It is often said that money and science can accomplish everything. Even Archimedes offered to raise the world if some one would give him another place to stand on, and that principle is illustrated by the Puno road. It was a triumph of energetic and brainy men, who, however, did not have to count the cost. The government of Peru paid the bills at a time when the republic was rolling in riches, when the mines of the Andes were pouring out a silver stream and the islands of the sea were furnishing an even more valuable contribution to the public treasury in the form of guano.



It was the first great mountain road to be built. It was the pioneer in that line of engineering which carves a right of way on the breast of a precipice and adopts the longest possible distance between two points to make the grade. There may be more remarkable pieces of railway construction in Colorado nowadays, but there was nothing to compare with the Puno road when it was built from the ocean over the backbone of the continent and climbed 14,666 feet across a desert, in a distance of 223 miles.

John L. Thorndike of Boston was the engineer. He still lives in Lima. It is said that when a party of his assistants had gone up and down the different gorges and over all the mountain trails, and after months of consultation and comparison of notes had laid out the profile of the road, Thorndike, their chief, put a blue print in his pocket, got aboard a mule and started up the line proposed. He rode for two days without looking at the blue print, but made a careful examination of the paths that the goats had surveyed in their search for the bunch grass that grows in the sand. Then he returned to the office at Islay, and with his pencil laid out the line.

The town of Mollendo, the ocean terminus of the railway, is built upon a rock and extends into the ocean and rises to the height of about 100 feet. The face is irregular and ugly-looking crags project in all directions and make the landing look very dangerous, although in reality they are a protection by breaking the force of the surf that rolls in from the Pacific. Behind a cluster of these rocks is a little pier, where the lighters discharge their passengers and freight whenever the weather will allow such work to be done. It isn't every day that people can land at Mollendo. Sometimes passengers on the steamers have to continue to the next port and remain there until the surf subsides, but we happened to have a comfortable landing and were cordially welcomed by Mr. Turner, the local manager of the railway, and Don Enrique Meiers, United States consul, who is the most influential and prosperous man in the place.

All the water used by the people of Mollendo is brought in

an eight-inch iron pipe a distance of eighty-five miles from the Chile River, which is tapped in the mountains at a height of 7,275 feet above the sea level. The pipe lies partly underground and partly on the surface along the line of the railway, and was laid about thirty years ago for the railway company as a matter of necessity to supply water to its shops at Mollendo and its tanks and stations along the way. Until that time the people of Mollendo were dependent upon water brought in tank steamers from more favored places up the coast, but now the railway company supplies the public at an average rate of \$24 a year per family. This water pipe is one of the great achievements of modern enterprise in South America, for without it the railway could not exist, and the water it brings is the source of life and productiveness to many important plantations. There is a powerful flow, and, coming from the height it does, a strong pressure, although it is claimed that at several places the pipe is nearly clogged with sand.

The Arequipa & Puno railroad is famous because it ran nearer the stars than any other in the world until the Oroya road was recently completed. The latter crosses the Andes through the Gallera tunnel at a height of 15,655 feet. The Arequipa road crosses at Crucero Alto, "the High Cross," at a height of 14,666 feet.

For the first ten miles out of Mollendo the track runs along the sea beach and then enters a *quedebra* or ravine in the mountains and begins its weary climb up the mountain side. It does not pass through a narrow gorge and between frowning precipices like the Oroya road, but the track lies upon a shelf that has been carved out of the rocks at a regular grade averaging 100 feet to the mile. It passes first through a region of rocks and sand, upheaved by some great cataclysm in ages past, where the surface is covered with a fine white sand called kaolin, which is shipped in large quantities to Europe for the manufacture of fine china. There is a good deal of borax in sight also, and in one of the side valleys, about fifteen miles from the track, is said to be the most valuable deposit in all the world, which belongs to a Califor-

nia syndicate. Between the mountains are beautiful valleys in which water has been spread over the soil and brings abundant harvests of cotton and cane. The cotton plant has a dark tint, the cane is a vivid green. The cotton plant of Peru is permanent and grows as high as a cherry tree, blossoming perennially and ripening about three months after the buds, so that picking is going on the year around, and a hacienda does not have to be replanted more than once in a generation.

As the track rises gravel and lava cover the surface and tufts of buffalo grass appear, which make the topography resemble the plateaus of Arizona and New Mexico. Cattle, burros and goats are seen on every side picking up a precarious living, and here and there is a prospect hole where miners have been looking for copper and silver without much encouragement. It is a curious fact that in all the excavation and blasting that was done in the construction of this road not a trace of mineral was disclosed. But, as I have said, there are several productive mines in the mountains within easy distance, from which ore is brought out in bags on the backs of burros. Then, as you go higher, chaparral and cactus appear, of the Spanish bayonet and the candelbra variety, which has arms like a candlestick.

The little stations are well built, with adobe walls and roofs of corrugated iron, and are surrounded by neat-looking dwellings of the same material in which the employes of the company are housed, and mud huts from which issue groups of half-naked children, who are innocent of shame and the sense of propriety. Women come to the cars selling fruits, chicha and bunches of sugar cane, which are eagerly bought by the native passengers in the second-class cars, and even that class which my friend De Leon, the United States consul-general at Guayaquil, insists upon calling "the proud patricians of Peru" do not hesitate to patronize them on the sly.

At some of the stations piles of freight are awaiting shipment, and droves of burros, patient, melancholy-looking little fellows, with monstrous heads and slender legs, gaze indifferently at the railway train, as if unconscious of its competition.

The track continues to wind like a snake in and out of the irregularities of the mountain side, and cuts all sorts of geometrical capers, like a Canadian skater. There are double curves and serpentines and horseshoes, and at places you can see three or four levels, one above the other, on the same mountain. The first station after leaving the seashore lies at an elevation of 1,000 feet, the second at 1,830 feet, the third at 2,493 feet, and Cachendo, the lunch station, is 3,250 feet above the sea. There is an average rise of 800 feet between stations until we reach Arequipa, which is 7,550 feet above tidewater. There is no difficulty engineering along the lower end of the line. There are no tunnels and only one bridge the entire distance, but the heavy construction is continuous, the roadway being carved out of the rocks with shovels, picks and dynamite.

The train creeps along very slowly at the rate of about ten miles an hour, an engine and two cars, the first a combination of baggage and second-class, the other a well-upholstered and neatly-kept coach, built on the American plan at the shops at Arequipa. The passenger traffic is limited. The first-class passengers go through to Arequipa, the local patrons are mostly second-class. It requires seven hours to make the ninety-two miles.

At an altitude of about 3,000 feet the soil improves, and you can see shrubbery from the car windows and a few modest but aspiring flowers. At Cachendo, the lunch station, the snow-clad mountains of the great Cordillera first come in view. El Misti is an active volcano, 19,200 feet high, with a hood of snow upon its crest, and its almost perfectly proportioned sides are seamed like a mold of blanc mange. On the right of El Misti is Pichu-Pichu, which rises 18,000 feet. On the left is Carachani, 20,000 feet high, and way beyond is Coropuno, one of the highest peaks in South America, which measures 22,000 feet.

The train here enters a desolate region called the pampas—a plateau between two ranges of the Andes, about forty miles across, at an elevation of about 5,000 feet, covered with volcanic sand and ashes, and absolutely lifeless, with not a living

thing in sight; not even a cactus or a sage brush has the courage to grow there. Many boulders and much lava, scoria and baked clay have been scattered over the surface by volcanoes, and you are reminded of the Yuma desert on the Southern Pacific railroad. The temperature becomes very warm, the air is dry and hot, and the reflection of the sun upon the sand is trying to the eyes.

At frequent intervals along the journey you see crosses that have been erected where men have died, and there is a ghastly shrine, hung with ribs, thigh bones, skulls and other melancholy reminders of the uncertainty of human life upon this awful desert. Some of the victims died of disease during the construction of the railway, others perished of thirst or exhaustion while crossing the pampas. All of them were once buried in the sand, but the wind uncovered their bones, which kindly hands have collected and hung about the emblem of the crucifixion.

Upon the desolate pampas of Peru is found extraordinary phenomena known as *medanos*—crescent-shaped piles of white crystals, called silica, rising to a height of sometimes twelve and sometimes twenty feet at the center of the arc, and molded with perfect symmetry. The points of the crescent are always of equal length, and always point to the north. The *medanos* move continually, making an average distance of about ten feet a year, but each pile keeps its own sand, and in a mysterious manner they never mix, nor do they increase in numbers. Veterans who have lived here all their lives and have been passing over the desert for half a century claim that the number of *medanos* is no greater than twenty-five or thirty years ago.

At Vitor, thirty-six miles from Arequipa, the track enters the mountains again, and the traveler has an opportunity of seeing evidences of nature in her most terrible mood. The mountains are covered with monstrous masses of broken stone, and are rent asunder with great chasms, which show what earthquakes and volcanoes can do when they give their mind to it. Here are deposited the upheavals of unnumbered centuries, and the depth of the deposits of broken stone, ashes and

lava are unmeasured. Near the base of the mountain, 100 feet above the bed of the river Chile, you see outcroppings of a black rock, an even strip, which shows where the bottom is.

The valley broadens as you approach Arequipa, and its fertility is shown by an emerald ribbon that illuminates the gloomy grandeur of the scenery. Irrigating ditches creep around the mountain sides and empty their contents over the slope; farmhouses are built of loose boulders and without mortar, and are thatched with roofs of straw in the shape of pyramids, over which a coating of clay has been placed to protect it from the rain and wind. On almost every farm is a circular corral, built of boulders, with a stone floor, in which the wheat is trampled out of the straw by the hoofs of animals, and many other curious and interesting objects are seen on every hand.

The snow-clad peaks are bathed in pink as the sun droops behind the surrounding mountains, and it changes to purple haze as the twilight fades.

Passenger trains leave Arequipa for Puno on Thursdays and Sundays at 7 o'clock in the morning, consisting of an engine, one first-class and one second-class passenger car and a box car for mails, baggage and express matter. Freight trains run every day. The locomotives and the first-class cars are on the American plan. The second-class cars are similar to those seen in Austria and Italy, with four long benches running lengthwise opposite each other, and ventilated by lattice work like a stock car. It is said that they were constructed in this way to allow the passengers to gossip with their friends outside, because it was found difficult to get them back in again if they were once allowed to alight at the stations.

The track climbs around the base of the volcano El Misti, rising nearly 500 feet during the first forty-four miles. The mountains are bare, and seem to be composed of alternate layers of rocks and baked clay. The latter looks like chalk, and cuts like cheese. It was very convenient and useful for grading purposes, and on the mountain sides are great cavities, which were shoveled out for this purpose, whose walls are as regular and as smooth as if they had been done with a carving

knife. At intervals of a few miles are lovely valleys, showing where the water has been gathered and utilized for irrigation, for the soil is rich and produces anything that man may plant in a most prolific manner. Sugar cane and wheat grow side by side, cotton and corn intermingle their foliage and potatoes and melons and ordinary vegetables and fruits grow as they do in California.

Wheat is one of the chief crops, although the supply has never yet been sufficient for home consumption, and much flour is still brought in from Chile. The grain is cultivated in the most primitive manner, as it is in Japan, where people have no idea of the value of time. The ground is plowed with a crooked stick, hauled by a team of oxen or mules. One man keeps the stick in the ground—usually the trunk of a tree whittled off to a point—while the other howls at the animals. The seed is sown by hand, and then the soil is raked over with a sort of harrow, home-made and of curious pattern. When the crop is ripe the women go into the field with long, straight knives, like the machetes used in Cuba, cut the stalks by the handfuls, lay them carefully in piles, tie them with strings and carry them on their backs to the headquarters of the hacienda, where, after the harvest is done, they separate the finest wheat from the stalks kernel by kernel with the fingers, while sitting on the pavement of a patio. The best of the straw is then separated from the remainder for manufacturing purposes and carefully tied up into bundles as big as one's arm. The remaining straw is spread on the floor of a circular corral called a cancha, which has a sort of windlass in the center, with a long pole in the hub. Animals of all kinds are hitched to this arrangement—oxen, mules, horses or burros, anything with hoofs—and they are driven round and round upon the straw until the grain is thoroughly trampled out of it. Then the straw is poked up into piles by men with forked sticks and stacked for fodder, for thatching houses and for other purposes.

Barley, which is another of the staples of the country, is treated in the same way.

According to tradition, wheat was introduced in Peru by a curious accident. Inez Munoz, the wife of Alcantara, a half-

brother of Pizarro, and the first European woman who landed in this country, brought with her a bag of rice. One day shortly after her arrival, while cleaning some of the rice to make a pudding for her brother-in-law, the marquis, she came across a few grains of wheat, which she carefully laid aside, and afterward planted in the northwest corner of the main plaza of Lima, just in front of where the city hall now stands. They yielded abundantly, and the next year the little crop was distributed among the settlers for seed. This was in 1535, and in 1539 the production was so extensive that the first flour mill was erected.

In 1560 the same lady, having meantime become a widow, introduced the first olive trees into Peru, which were also planted in the plaza of Lima. All of them died except two, one of which was stolen by a Chileano and became the parent of all the olive trees in Chile, while from the other sprung all the groves in Peru.

The soil improves with the elevation because it is moistened almost daily by the clouds that enwrap the mountains, and as we reach Canaguas, which is 13,380 feet above the sea, the mountain sides are covered with gray bunch grass, which makes excellent grazing. A few wild flowers are seen along the sides of the track, and little streams come rippling down from the melting snows in a most cheerful and audacious manner, but are soon swallowed up in the thirsty sands. These streams contain a delicious fish that looks like a smelt and is called a pejerray. Herds of fine cattle, large-boned animals with spreading horns, are seen in every direction, and vast droves of sheep, including many alpaca and vicuna, both being limited in their habitat to Bolivia, southern Peru and some parts of Chile. The alpacas look like dwarfed llamas, the vicunas resemble our deer. The sheep and cattle are herded by women, who carry their knitting and spinning spindles with them and sit down among the rocks as contentedly as if it were a most comfortable fireside. At occasional intervals a rough shelter is built, in which they can seek protection in case it storms. It is usually a roofless well of stones six or eight feet in diameter and five or six feet high. The wind often blows

with great violence through the mountain gorges and across the plateaus, and it was only the other day that a cyclone tore down a substantial brick building that was used as a station house by the railway company. Large corrals are provided for herding the sheep and vicuna, but the cattle are allowed to take care of themselves under all circumstances.

In the high plateaus are plenty of springs, and water can be obtained at an elevation of 14,000 and even 15,000 feet by driving wells into the sand. There is supposed to be an artesian basin fed from Lake Titicaca and its twin, Popo, which has no outlet except underground, and it is a mystery where all the water goes to. There are many small lakes in the hollows at an elevation similar to that of Titicaca which have neither inlet nor outlet, but catch the surface drainage when the rain or snow falls. The snow line is about 16,000 feet. The ice line begins at Canaguas, 13,380 feet, and a film forms over standing water every night. There is no timber on any of these mountains, and the only fuel is llama dung and the yareta, a sort of peat which looks like cauliflower or pumice stone, and grows in the swampy highlands, where it is cut out of the soil about a foot thick. This remarkable plant seems to grow downward, for the top is always almost even with the surface of the soil, and looks like green mold. The peons cut it out, spread it on the ground to dry in the sun and wind, and then bring it into the settlements for fuel. It burns like peat.

At an elevation of 13,413 feet the railway passes through immense deposits of chalk, with occasional outcroppings of lava. This is followed by a number of mountains that seemed to be composed entirely of baked clay, showing evidences of intense internal heat and tremendous upheavals from the neighboring volcanoes. There is another curious phenomenon which nobody seems to be able to explain. One hill will be composed of chalk or baked clay, without the sign of a stone, while the next hill will be composed of stones entirely, piled up in enormous masses with such confusion as to suggest that some Titan had lifted a mountain and put it back upside down. It is a field of marvels for the geologist. At one place the track encircles an ancient crater about twelve miles wide which

is filled with ashes and lava to an unknown depth. While Misti is semi-active and vapor continually escapes from its crater, the volcano of Ubinus, which is over 16,000 feet in height, is continually active, although its eruptions are not severe and no damage has ever come from them.

Within sight of the car windows, besides these two monsters, we have frequent views of Coropuna, one of the highest peaks in America, which measures 22,800 feet, Charchani, 19,400 feet, and Pichu, which is 17,800 feet.

Sumbay is the station for the famous Cailoma silver mines, owned and operated by an English company, which sends out large quantities of high-grade ore in bags on the backs of llamas. It pays an average of \$800 to the ton, and is shipped by sea to Liverpool at a cost of 55 shillings a ton to the miners. The railway company regulates its rates of transportation according to the value of the ore. It carries copper cheaper than silver, and the rate on bullion is a percentage of its value. Nearly all the gold goes to Lima to be coined in the mints.

We cross the grand divide at Alto Crucero (the High Cross), a collection of adobe huts and a well-built station, upon the front of which is an inscription to inform the traveler that it is the highest point upon the railway, and 14,666 feet above the sea. There are mining settlements in Peru at a greater elevation, but for many years this was the highest point in the world at which steam was used for motive power. The inhabitants are mostly railway men, it being the end of the division, and the families of the shepherds, who watch their flocks upon the pampas that surround it. It is not so bleak and dreary as the deserts 3,000 or 4,000 feet below; the surface of the soil has a cheerful appearance that comes from the clumps of grass that are a good way apart when you inspect them individually, but collectively make quite an attractive coverlet for the earth of a grayish green.

We felt no sirroche, the disease which usually attacks people who rise rapidly from a lower to a higher altitude, because we had been forewarned and kept as quiet as possible in the car which Mr. McCord, the manager of the railway, had provided for our accommodation. Sirroche is no more dangerous

than seasickness, but quite as uncomfortable. Its symptoms are nausea, severe pains in the head and bleeding at the nose and ears. We could perceive the pressure of the blood in the head, because of the rare atmosphere, but felt no other evil effects.

At Alto Crucero water freezes every night of the year, and the thermometer frequently falls to 6, 8 and 10 degrees below zero. There are no facilities for artificial heat—not even a fireplace—and people keep themselves warm by putting on ponchos and other extra wraps. Mr. Grundy, who has charge of the smelter at Maravillas, says that this winter the thermometer has frequently fallen to 8 degrees below zero in the sitting-room of his residence, but the family have felt no discomfort from the lack of stoves and furnaces, and have sat around the evening lamp reading and chatting just as they are accustomed to do at an ordinary temperature.

At noonday the sun is intensely hot, because of the elevation and the rarity of the atmosphere, and blisters the flesh of those who are not accustomed to it. There is a difference of 20 and sometimes 30 degrees in the temperature of the shade and the sunshine. Water will freeze in the shade while twenty feet away men may be working in their shirt sleeves.

The natives seem to be entirely inured to cold, and go about barefooted and barelegged over the ice and the stones indifferently, without regard to the temperature; but they have a way of heaping the blankets on their heads and wrapping up their faces to keep the pure air out of their throats and nostrils. The women who herd the flocks are often out on the mountains for weeks at a time without shelter or anything to eat except parched corn, strips of dried meat and coca leaves, which are the most powerful of nerve stimulants.

From Crucero Alto, the highest railway town in the world, the track drops into the Lagunillas, or lake region of the Cordilleras, where, 14,250 feet above the sea, is a group of large lakes of very cold, pure water without inlet or outlet. They receive the drainage of the surrounding hills and conceal it somewhere, but there is no visible means of its escape. A

fringe of ice forms around the edges of the lakes every night the year round. They contain an excellent variety of fish called the pejerrey, which is caught near the shore and sold at Puno and in other neighboring towns. The two largest lakes, Saracocha and Cachipascana, with several smaller ones in the same neighborhood, are owned by the family of Mr. Romana, president of Peru. He owns immense tracts of land in this locality, with thousands of sheep, cattle, llamas, alpacas and vicunas, which are herded upon it.

A curious phenomenon about the lakes is that they keep at the same level all the time, regardless of the dry and rainy seasons. No amount of rain will make any difference with their depth, which, however, in the center is unknown. And this adds to the awe and mystery with which they are regarded by the Indians. There are no boats upon the lakes except a few small balsas, or rafts, made of bundles of straw, which keep very close to the shore, for fear of being drawn into whirlpools that are said to exist in the center. There is some foundation for this fear, for only two or three years ago a balsa containing five men disappeared in the darkness, and was never heard of again. Of course, it may have tipped over and its occupants have been paralyzed by the cold water in an ordinary way, but their bodies were never discovered, nor did the balsa ever float to shore. Therefore the people think the whole party was lured into a maelstrom and swallowed up by the mysterious waters.

The whirlpool near the center of Lake Popo, which receives the waters of Lake Titicaca, is well known, and hundreds of men have lost their lives by venturing too near it. Boats that are drawn into the current are whirled swiftly around a few times, and then disappear. For the protection of navigators the government of Bolivia has anchored a lot of buoys in Lake Popo, and boatmen who observe them are in no danger. There is supposed to be an underground outflow from all of these lakes. It is claimed that articles which have been thrown into their waters have afterward been picked up on the seacoast near Arica, and careful observers say that on the beach in that locality are frequently found cornstalks, reeds

and other debris which do not grow on the coast, but are found in great abundance among the interior lakes.

The station house at Lagunillas, which was built of brick imported from the United States, was carried away by a cyclone in 1899. It was the first storm of that kind ever known in the Puna, and brought terror to the hearts of the natives, although no other destruction was noted.

After crossing the grand divide at Crucero Alto you enter the great basin that lies between the two ranges of the Andes and is known to the natives as the Puna. It stretches to a distance of about 700 miles in length and varies from twenty to 300 miles in width. Before the time of the conquest it was the most populous and productive part of Peru, and the center of the great Inca empire. On either side this mighty tableland is supported by the mighty buttresses of the Andes and the Cordilleras, and ranges of snow-covered peaks can be seen on to the east and to the west from every eminence. At several points the two great ranges come together in a knot. Such is the case at the pass of La Raya, which is the favorite trail for crossing over to the eastern slope of the continent, and the gorge of the Vilcanota, a little stream which is the true source of the Amazon. Around the chains of snow-clad peaks is a vast chaos of mountains, tangled into ranges and cross ranges, bleak, barren and lifeless, which, like the pyramids of Egypt, have looked down upon centuries of civilization, and have seen the solution of problems which puzzle the minds of modern scientists. Between these mountains, wherever water can be found, are rich, productive valleys, called *bolsones*, or pockets. They are only specks on the map in comparison with the area of the desert, but yielded sustenance for an empire for many centuries, and there is every evidence that during the Incarial period they were taxed to their utmost.

In no part of the world does nature assume more imposing forms nor offer more striking contrasts. The deserts and the mountains are as bare and repulsive as the Sahara, but the valleys are as rich and luxuriant and productive as those of Italy. It is no figure of speech to say that here eternal summer sits side by side with everlasting winter, and that the per-

fumes of flowers and fruits are borne across repulsive wastes of sand and rock. It was here under these conditions and in such a terrible struggle for existence that the Incas maintained a government, the first known to the world in which the equal rights of every human being were recognized, a community that furnished an ideal for modern socialism, and that worshiped a god whose instincts and attributes were almost parallel with those of the Jehovah of the Mosaic period. It was natural that men who shivered in the snowy mountains should recognize in the sun the source of heat and light, the greatest blessings they enjoyed, and hence it was given the chief place in their pantheon.

The pastures improve as the railroad descends from the grand continental divide into the Puna, the air becomes moister, the soil is deeper, the rocks are not so numerous and the topography of the country resembles the great plateau of Colorado and Wyoming. The river Maravillas, which flows rapidly from springs in the mountains through this great plain, and during the rainy season carries a considerable body of water, is bordered with haciendas and villages of adobe huts, and irrigates a large area. At an elevation of 12,000 feet the cultivation of the soil can be made profitable, wheat, corn, barley and potatoes being the chief staples. The nights are cold, but the days are very hot all the year around, and are sufficient to ripen the more hardy vegetables like cabbages and turnips. The corn is peculiar, the ears being short and thick, not more than three inches in length. Two crops are raised every year, and they constitute the staple food of the Indian population, as well as the basis of the national drink called chicha, which was offered in a golden goblet to Pizarro in the bay of Tumbez when he first entered the Peruvian waters. The chroniclers relate that the great chieftain drank the beverage, smacked his lips, saying, "Es muy bueno" (It is very good), casually put the golden goblet into his saddlebag and rode on without further ceremony.

Chicha tastes like a mixture of yeast and sour milk, and strangers are not fond of it, but vast quantities are consumed by the natives. Perhaps the stories that are told of the meth-

ods of its manufacture have some influence upon the appetite of foreigners. The corn is first immersed in lye, which eats off the crust or hull. It is then crushed in a great earthen jar with a pestle, and warm water is poured upon it. It swells and ferments. In a few days, being subjected to the extreme changes of temperature, a liquid containing about thirty parts of alcohol is produced. A novel method of promoting fermentation is to add to the mixture small quantities of corn that have been masticated by old women of the family who have not outlived their teeth and have nothing else to do. People who visit the Indian villages tell of seeing long rows of ancient dames sitting with their backs against the wall on the sunny side of the house, chewing away with great industry and patience. As fast as a mouthful of corn has been reduced to the proper consistency it is placed in a little earthen dish and a new mouthful fresh from the cobs is subjected to the same process. I have not been able to ascertain the chemical formula, but it is asserted that the saliva of old women applied to the corn gives the chicha a flavor which it cannot otherwise obtain, and that adds greatly to its popularity.

This railway is said to be the best in South America. It has a fine track, and the rails are quite as smooth as any we find in the States. The rolling stock, all manufactured at the shops in Arequipa, is in excellent condition, the station houses are neat and attractive, and the eating houses furnish meals that are abundant in quantity and well served. The patronage is not large. The population is scanty and is chiefly composed of Indians who have no occasion to travel. Most of the freight outward is furnished by the mines, and consists of silver, copper and gold ores. A considerable quantity of wool is exported, also, and a few hides. The inward freight is merchandise for Bolivia and Cuzco, and supplies for the mines. The greater part of it appears to have come from Germany, and it is remarkable how rapidly Germans are absorbing the commerce of this country. At the present rate they will very soon have a monopoly of the retail trade.

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The pastures improve as the railroad descends from the grand continental divide into the Puna, the air becomes moister, the soil is deeper, the rocks are not so numerous; the topography of the country resembles the great plateau of Colorado and Wyoming. The river Maravillas, which flows rapidly from springs in the mountains through this great valley and during the rainy season carries a considerable amount of water, is bordered with haciendas and villages of adobe and irrigates a large area. At an elevation of 12,000 feet the cultivation of the soil can be made profitable, wheat, barley and potatoes being the chief staples. The nights are cold, but the days are very hot all the year around, sufficient to ripen the more hardy vegetables like cabbages and turnips. The corn is peculiar, the ears being short and not more than three inches in length. Two crops are raised every year, and they constitute the staple food for the population, as well as the basis of the national drink, the chicha, which was offered in sacrifice to the gods at the bay of Tumbes when he was captured. The chroniclers relate that when he was in the cage, smacked his head (which was not a very good), casually rode on without any further notice.

Chicha is a drink made by the

ods of its manufacture have some influence upon the appetite of foreigners. The corn is first immersed in lye, which swells off the crust or hull. It is then crushed in a great mortar with a pestle, and warm water is poured upon it. It swells and ferments. In a few days, being subjected to the same changes of temperature, a liquid containing about thirty per cent of alcohol is produced. A novel method of promoting fermentation is to add to the mixture small quantities of corn that have been masticated by old women of the family who have not outlived their teeth and have nothing else to do. People who visit the Indian villages tell of seeing long rows of ancient dames sitting with their backs against the wall on the sunny side of the house, chewing away with great industry and patience. As fast as a mouthful of corn has been reduced to the proper consistency it is placed in a little earthen dish and a new mouthful fresh from the cobs is subjected to the same process. I have not been able to ascertain the chemical formula, but it is asserted that the saliva of old women applied to the corn gives the chicha a flavor which it cannot otherwise obtain, and that adds greatly to its popularity.

This railway is said to be the best in South America. It has a fine track, and the rails are quite as smooth as any to be found in the States. The rolling stock, all manufactured at the shops in Arequipa, is in excellent condition, the coaches are neat and attractive, and the eating houses furnish food that are abundant in quantity and well served. The passenger population is not large. The population is scanty and is chiefly composed of Indians who have no occasion to travel. Most of the food outward is furnished by the mines, and are copper, silver, copper and gold ores. A considerable quantity of wool is exported, also, and a few hides. The greater part of it appears to be from the provinces of Arequipa and Puno. The commerce of this country. As the population increases, it will soon have a monopoly of the commerce of the country. On the mountain slopes evidences of a few profitable

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old towns that times and as a result of boasting of South America, places even in

things. First, the usual observances. The quality of its atmosphere is here than anywhere else. It is surrounded by a sea of clouds. The sea is sapped of its vitality and is dead. It dries up and the sea is dead. Arequipa was selected as the capital of South America, and its assistants are now the capital of the south-

for several centuries as a literary life. It has produced great men, and, although its students as it used to be, from all parts of Peru to

well as fame is that the blood purer there than anywhere else. Arequipa can trace their lineage, than those of any other place. Therefore

at least those which pay the best, are on the eastern slope of the Cordilleras. According to the stories you hear, nature has concealed her richest treasures in the most inaccessible places. Near the town of Maravillas is a mountain of metal named Berenguela, similar to the iron mountain at Durango, from which an English company is now taking copper ore that yields from 6 to 25 per cent, manganese that is 12 per cent pure, iron that pays 10 per cent and silver carbonates that pay from \$85 to \$100 a ton. Near by is another mountain called Sotuca, belonging to the same company, which has a curious deposit of iron at its very top, and much of the ore is 65 per cent pure.

There are fine cattle on all the ranges, much better-looking than those in the lower latitudes, and as the train approaches the center of the basin the population seems to increase, until we come to the town of Juliaca, where the railroad divides, one branch running due north along the center of the plateau to the ancient town of Cuzco, the capital of the Inca empire, and the other to the city of Puno, which lies upon the western shores of Lake Titicaca, where a line of steamers furnishes transportation to Bolivia.

XVI

THE QUAIN'T OLD CITY OF AREQUIPA

Arequipa is one of the quaintest and queerest old towns that ever was, just about two centuries behind the times and as conservative as it is antiquated. It is a subject of boasting that Arequipa is the most conservative city in South America, and that means in the world. There are few places even in Spain so old-fashioned, so much out of date.

Arequipa has been famous for several things. First, because the people are so devout in their religious observances.

Second, Arequipa is famous for the purity of its atmosphere. The air is clearer and the sky is bluer here than anywhere else, they declare. Being entirely surrounded by deserts, every breeze that reaches Arequipa is sapped of its moisture. Nothing putrefies; decay is arrested in animate as well as inanimate life, so that everything dead dries up and blows away. Because of its pure air Arequipa was selected as the location of the Harvard observatory in South America, from which Professor Bailey and a staff of assistants are now making a map of the stars and the constellations of the southern hemisphere.

Arequipa has been celebrated, too, for several centuries as a seat of learning and a center of literary life. It has produced many famous scholars and statesmen, and, although its university is not so much sought by students as it used to be, many young men are still sent here from all parts of Peru to be educated.

Another source of satisfaction as well as fame is that the old Spanish families have kept their blood purer there than elsewhere, and the leading citizens of Arequipa can trace their pedigrees back further, it is claimed, than those of any other part of Peru, or South America for that matter. Therefore

they are proud—very proud and exclusive—a little better than the rest of mankind. But their pure air and pure blood is about all they have to brag of, for in the preservation of their dignity and the contemplation of their virtues, they have had little time to devote to other pursuits, and poverty prevails to a most painful degree among some of the oldest and most aristocratic families. The women are beautiful, the men are reserved and austere; progress and modern ideas are looked upon as an evidence of vulgarity, and the fact that Arequipa is so slow and old-fashioned is a matter of congratulation rather than regret.

The city has a background that is of itself remarkable. Three massive mountains, always covered with snow, lie between it and the sea. On the right is Pinchu-Pinchu, a long sierra with deep crevasses that are always filled with snow and glaciers. On the left is Chachani, of similar character and topography, while in the center is El Misti, one of the most stately and beautiful mountains in the world, distinguished for its symmetry. They all reach an altitude of 20,000 feet approximately, and very few cities enjoy so beautiful a landscape.

By the side of El Misti is a miniature of the grander peak, known as Misti Chico (Little Misti), having the same shape and a height of about 8,000 feet. El Misti was formerly a source of apprehension because it is an active volcano with sulphurous vapors constantly issuing from the crater, but Misti Chico, the little one, is all right.

In 1868 Arequipa was almost entirely destroyed by an earthquake. Some 5,000 people were killed and more than half the houses were destroyed. The seal of the city of Arequipa bears a representation of the volcano, with smoke rising from its peak, and the natives of the place call themselves the sons and daughters of El Misti.

Notwithstanding the purity of the atmosphere Arequipa is an unhealthy place, because of the unspeakable filth in the streets and the clouds of dust, full of all sorts of disease germs, constantly arising from them. Nature alone protects the people from a destructive epidemic. Through every street runs

a little stream of water, or an acequia, as it is called, into which all garbage and offal of the houses is thrown. The odors are very offensive to strangers, although the inhabitants appear to have become accustomed to them. The filth that does not reach these surface sewers is left lying upon the cobblestone pavement to be devoured by wolfish-looking dogs. There are no buzzards there at present. They were poisoned last winter from eating the flesh of dogs that had been killed by order of the municipal authorities. In nearly all the South American cities large flocks of buzzards are found serving as boards of health, and they do their work efficiently. It has now become necessary for Arequipa to replace those which were destroyed, and it is a matter of serious discussion how it shall be done.

The residences of this Rome and Athens of the South American continent are of the most substantial but primitive character. In other parts of Peru the danger from earthquakes is avoided by using elastic bamboo splints for walls and partitions, but the altitude and climate of Arequipa require greater protection for its inhabitants. Therefore the houses are made only one story in height and as substantial as possible, it being asserted that one-third of the area of the city is covered by the foundation and partition walls of its houses, many of them being six, eight and nine feet thick, so, when it becomes necessary to cut a window or a door, it is as much labor as boring a tunnel. The walls of the churches are sustained by enormous buttresses of stone and adobe. On the side of El Misti are several valuable quarries, from which a soft, light and porous stone is taken for building purposes. The cathedral, which is a stately and beautiful example of the architectural art, is built of that material. Its pillars and towers, which were destroyed by the earthquake of 1868, have recently been restored and are models of symmetry.

The houses are dark, gloomy and comfortless. Their enormous walls surround patios in the Spanish style, from which all the rooms are reached and lighted. Most of them have no windows, and get all their light and ventilation through the doors.

There is no artificial heat, because the people think it is unhealthful, notwithstanding the fact that when the sun goes down the atmosphere is usually cold. In June, for example, the variation of the thermometer from 7 o'clock in the morning to 2 o'clock in the afternoon was from 36 to 72 degrees Fahrenheit. In August the average temperature at 7 o'clock in the morning was 35.6. At 2 o'clock in the afternoon it was 71.4, and these extraordinary figures do not represent extremes, for the contrast of the noonday heat with the temperature after midnight is much greater than at 7 o'clock, when the sun has had a full hour to warm the atmosphere. The difference of temperature between the sunny and the shady side of the street is often as great as ten degrees.

These extremes naturally have a serious effect upon the human system, and particularly upon the health of children, especially when no attempt is made to obviate or modify them by artificial means. There is not a stove in Arequipa except at the Harvard University observatory. There is one fireplace in the house of a foreigner, in which he burns the knots of scrub pines brought down from the mountains, but in all the other houses people put on overcoats and wrap themselves in blankets and try to keep warm that way.

Because of the pure atmosphere and arid climate, the absence of clouds and the high elevation, the city of Arequipa was selected as the site of the astronomical and meteorological observatories of Harvard University, for which funds were provided by a bequest from the late Uriah A. Boyden. They are under the charge of Prof. Solon I. Bailey, who is assisted by Prof. Winslow Upton, Dr. DeLisle Stewart, Mr. W. B. Clymer, and others from the home observatory at Cambridge. These gentlemen at the observatory in Arequipa are engaged in making a map of the heavens of the southern hemisphere, the elevation and the purity of the atmosphere enabling them to reach many stars that are not visible in other localities, while meteorological records of great scientific usefulness, made by automatic instruments on the top of the volcano Misti, are being accumulated.

"Our first meteorological station was established by Prof.

William H. Pickering in 1892," said Professor Bailey, "at an elevation of 16,650 feet on the mountain Charchani, but the exposure of the instruments was not favorable, and in 1893 we succeeded in establishing a new station on the summit of El Misti, which is 3,500 feet higher than the one on Mont Blanc, and therefore the highest in the world. The instruments now in use on the summit are dry and wet bulb thermometers, rain gauges, a Richard barograph, a thermograph, a hydrograph and a meteorograph constructed by Fergesson of the Blue Hill observatory especially for this station, and designed to record temperature, pressure, humidity and the direction and velocity of the wind, and to run three months without rewinding. When the station was first established it was regularly visited by observers once in ten days. Since then about once a month. On these visits the clocks of the self-recording instruments are rewound, the record sheets changed and the readings made. The trip to the summit is by no means easy, but we have made a good road, and it can now be accomplished in two days, and entirely on muleback. The night is spent in a hut at the base of the peak at an altitude of 15,700 feet, where we have what is called the Mont Blanc station, because its altitude and the summit of Mont Blanc are almost the same.

"The volcano Misti," continued Professor Bailey, "forms the center, and from its symmetry, height and nearness, the most imposing figure in the great group of mountains that fill more than a third of the horizon of Arequipa. It stands isolated in a great stretch of barren pampa. The plaza of the city has an elevation of about 7,600 feet, but the surrounding plain is much higher, and for convenience we estimate that the Misti, as a separate and distinct mountain, rises from a mean elevation of 11,000 feet. We find that its diameter at this altitude is 34,312 feet, its height 19,173 feet, and its volume 2,465,000,000,000 cubic feet. Assuming the specific gravity of the materials ejected from its crater to be two and five-tenths times that of water, the weight of the mountain is 192,000,000,000 tons, but this represents only a small part of the material that has been emitted from the volcano, for there are vast deposits of lava extending in all directions, and the deserts

for many miles distant are composed to unknown depths of volcanic ash and rock.

"During the wet season the storms leave Misti covered with snow down to 16,000 feet and sometimes to 14,000 feet, but if the following day chances to be clear the fresh snow will disappear before night. The snow always lasts longer on the southwest side of the mountain, and on the north side it disappears very rapidly, which is due to the fact that we are south of the equator, and that during the clear months of the year the sun is north of the zenith. It is a fact, however, that snow extends to a much lower level on the neighboring ranges of mountains. This is attributed to internal heat, as the Misti is a volcano in a state of considerable activity, and exhibitions of hot vapor, sulphuric fumes and other phenomenon are apparent to all observers.

"The cone of the mountain is composed of rugged masses of rock, the remains of ancient lava flows, and vast slopes of volcanic sand, whose angle varies between 30 and 35 degrees. The few persons who have been fortunate enough to reach the summit have been surprised at the extent and gloomy grandeur of the scenery. The crest is unmistakably a crater formed by the original upheaval, and the maximum diameter is about 2,800 feet. The diameter of a new and comparatively modern crater is about 1,500 feet at the top and 500 feet at the bottom, which is nearly level and composed of yellow lava and sulphur. The vapors playing upon this produce the appearance of boiling sulphur, and in former times people reported flames, which, if it were an established fact, would be of great interest.

"The first ascents were undoubtedly made before the arrival of the Spaniards, and are beyond the reach of history and even tradition. Within the crater are remains of walls and firewood, which must have been left there by human hands, and the old writers report that pagan sacrificial rites were celebrated there, or perhaps it may have been the custom among the Indians to bury their chiefs at this great altitude. The first expedition, in 1677, found vestiges of a stone structure marking the form of two or three rooms, which still existed two centuries later, and are a matter of great interest.

That expedition is said to have ascended the volcano by ecclesiastical and royal authority to investigate the cause of a dense column of smoke seen rising from the summit, and at other times during the same period similar phenomena appeared, but nothing definite or authoritative exists on this subject, and for two centuries at least El Misti has been semi-quiscent, emitting only vapors in varying quantities.

"Many persons have visited the crater during the last two centuries, but no one has descended into the crater. With proper appliances this would be by no means impossible but for the sulphurous vapors which abound there and which would probably be fatal to life. For awhile there was great enthusiasm for ascending the Misti, but this interest was terminated in 1878 by the sad fate of two English tourists—Messrs. Rider and Rothwell—who ascended, and in attempting to make the circuit of the crater lost their way, became exhausted by hunger, thirst and fatigue, and perished among the cliffs on the north side of the mountain near the present mule path.

"A variety of coarse grass, known as 'paja,' and a mosslike plant growing in large masses, called 'yarata,' are found as high as 15,000 feet, and scattering specimens are occasionally seen at an altitude of 17,000 feet. Vicuna and guanacos feed as high as 14,000 feet, and at 16,000 feet various birds and a small animal resembling a rabbit have been met with. Condors have been seen from the summit flying at an elevation much greater than that of the mountain.

"At an altitude of 13,300 feet there is a wretched little hut, known as the 'Tambo del Alto de los Huesos,' where we found an old woman, with a grandchild of 6 or 7 years, who furnished the poorest kind of accommodations. During the first evening we spent upon the mountain in August 1893, she regaled us with stories of her experience of twenty-five years in that dreary spot, and said that many people, priests and officials, Arequipians and foreigners had tried to climb the mountain, but most of them had died, and those who died were foreigners, which was rather discouraging under the circumstances.

"At the height of 16,500 feet there is another tambo, or hut, of rough stones, with a roof thatched with straw, known

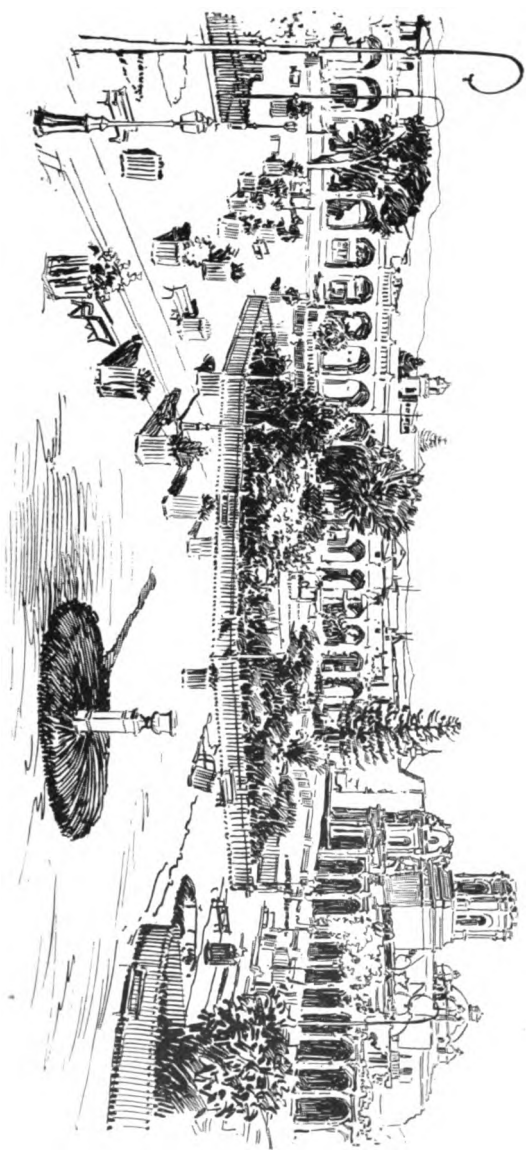
as the 'Inn of the Water of Miracles,' from the fact that according to tradition, a long time ago, the Lord appeared and ordered water to flow from the ground. Near the hut is a perennial spring of good water, welling out of the dry sand, which, curiously enough, only flows during the daytime. The water begins to run about 9 in the morning, and ceases between 4 and 5 o'clock in the afternoon.

"In 1893," continued Professor Bailey, "with great difficulty we built a mule trail to the top of the mountain and established our meteorological station there. Since then we have visited the place frequently, and the mountain is always the source of awe-inspiring phenomena as well as scientific interest."

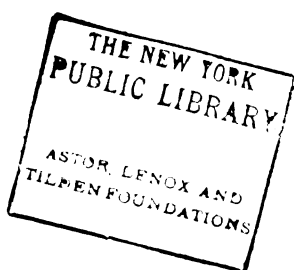
In the principal street of Arequipa, half a block from the main plaza and the city hall, is a peculiar institution, which we would call in the north a foundlings' home. The most interesting feature of the place is a square hole cut in a heavy oaken door about 12 by 18 inches in size. This aperture closes with a little slide which may be easily opened, and on the inside will be found a box and a bell. Any person having a superfluous baby can poke it through that hole, drop it into the box, ring the bell and walk away.

This institution has been in operation for more than a century and a half. It was founded by a benevolent gentleman named Chaves, and is supported by a lottery, private subscriptions and aid from the state, being under the care of a noble woman of great business ability—Madre Angelica of the Catholic Sisterhood of Mercy. Every child that arrives in that mysterious way is taken to her motherly arms to be nursed and coddled, clothed and educated and taught a trade, and finally graduates from the institution into some occupation, or is adopted by some family who may or may not have had a knowledge of its birth. Unless the child has a name tacked to its clothing, it is christened by the mother superior, and thereafter bears the family name of Chaves. The number of Chaves in this city and vicinity is very large.

Some of the graduates have attained eminence and influence in the community, but most of them belong to the labor-



Main Plaza at Arequipa Peru



ing class. All, however, remember with gratitude and affection the institution which sheltered them in their infancy and gave them their education, and which is always a home to which they may return in sickness or trouble or in old age. Twice a year, on the anniversary of the foundation of the institution and upon the saint's day of Madre Angelica, a reunion is attended by as many of the former inmates as can arrange to come. The ceremonies are similar to those of our Thanksgiving day. A religious service is held and a sermon is preached from an appropriate text, and then all join in a good dinner with reminiscences and congratulations and hopes for the future.

In visiting this institution I was impressed with its comprehensive benevolence, and although a good many children showed evidences of aristocratic blood and some were plainly of foreign parentage, the majority of them were much more clean, comfortable and well cared for than they could have been in the ordinary home. Interesting romances are told of the institution. Often babies left there in the night are taken away by remorseful mothers the next morning. It is common too, shortly after the arrival of an infant, to have a tearful woman apply for a position as wet nurse, and although she may not always suspect it, the experienced nuns often comprehend the situation, and place her own baby in her arms.

Saint Francis paid a seven days' visit to Saint Dominic while I was in Arequipa and returned to his own church attended by an imposing retinue and much ceremony. The town was alive with flags. The public buildings, the plaza and many private houses and stores were decorated. A procession with two bands of music and bodies of military, civil officials, monks, benevolent societies, religious orders and citizens attended mass at Saint Dominic's church, and then escorted the image of Saint Francis through the principal streets to the chapel adjoining the Franciscan monastery, and there remained until another mass was celebrated with unusual formality. During the progress of the procession, fireworks and firecrackers were exploded in large quantities, and as the image of the saint, which was carried upon the shoulders of

peons under a canopy, passed by, everybody kneeled and crossed himself and said a prayer.

The event was duly reported in the morning papers, one of them beginning with the following paragraph:

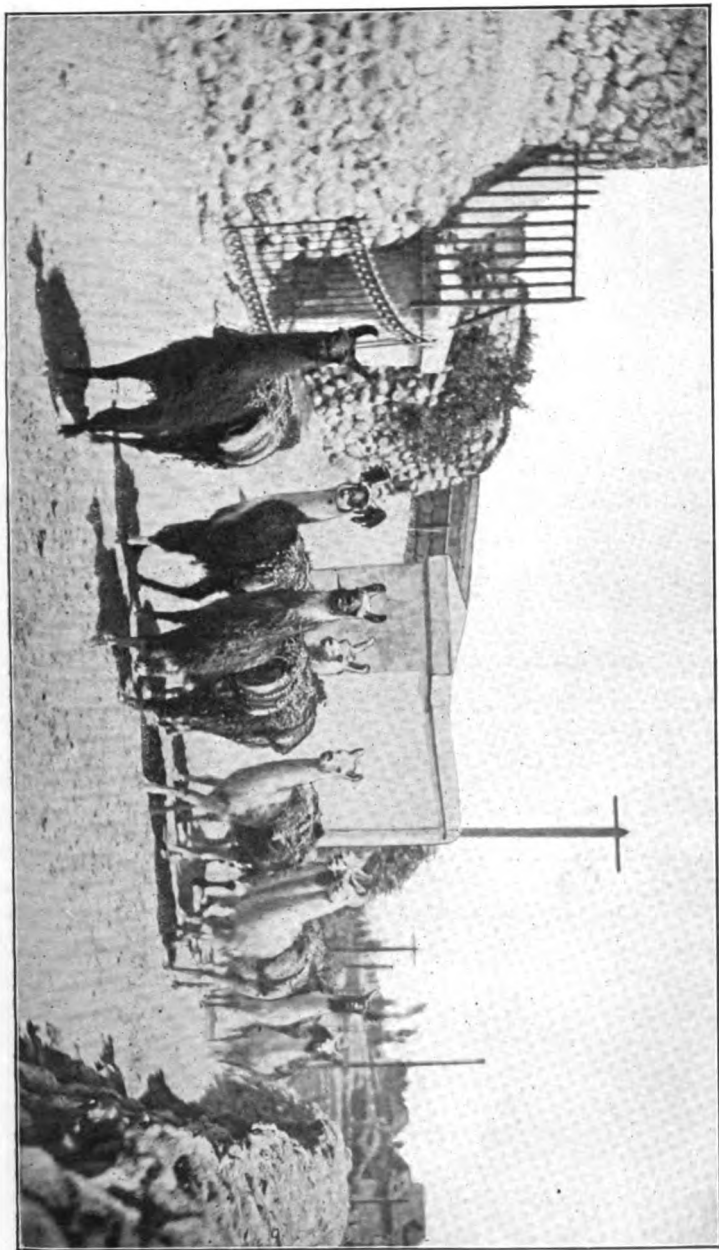
"The image of the Patriarch of Aziz yesterday returned to his own temple after a seven days' visit at the temple of Santo Domingo. He was accompanied by a delegation from the order of Dominicans, by representatives of the municipality, by a military escort and a large concourse of citizens, and the progress of the saint through the streets was the occasion of a popular demonstration."

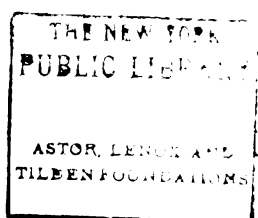
In Arequipa, the wealthy, influential and aristocratic families nearly all belong to the class known as "fanaticos."

It is customary for business and professional men to retire for a few days every year, which they spend in some monastery or other retreat, purging themselves of their sins by fasting, prayer, scourging and other forms of torture. Piety, or, at least, the observance of the forms of religion, is essential to secure and retain the respect of the people. Nowhere else in South America do the men pretend to perform their religious duties. One is accustomed to see only women at church, but in Arequipa almost every native man of business attends mass every morning before he goes to his office or his shop, and at any hour during the day, if you enter a church, you will find as many men as women, kneeling with clasped hands before the altar. Protestants or "Evangelicos," as they are called, are ostracised, and masons are forbidden to live in this city.

A magician from North America who visited Arequipa, "billed" the town with attractive posters such as are used by Hermann, Kellar and other sleight-of-hand men on the northern continent, the chief performer being represented in the pictures on the most familiar terms with devils of various sizes. The day after these posters appeared on the dead walls of the city the magician received a visit from the bishop, who inquired whether he pretended to exercise a supernatural influence over evil spirits. The magician replied that he did not, that his tricks were entirely mechanical and were produced by appa-

A Llama Train.





ratus which he had himself invented, and by the dexterity of his hands. The bishop admonished him that this fact should be fully explained to the public, because an impression to the contrary had been created, and unless it was corrected it would be necessary to prohibit the performance.

The magician promised to make the matter clear to his audience before commencing the first performance, and he endeavored to do so to the satisfaction of two priests who sat in one of the front rows for the purpose of censorship. The next morning, however, the magician found that all the posters that contained pictures of devils had been scraped off by order of the bishop, but the next night he hired men to replace them and pasted the biggest poster in his collection upon the walls of one of the churches. In the morning there was a crowd of curious people around it, watching a gang of men who were scraping it off. Everybody in town knew of the incident, and it turned out to be a valuable advertisement.

In the old times before the railway was built it was a journey of twenty or thirty days across the desert to reach Bolivia, and even now, strange as it may appear, some primitive-minded people prefer to go that way. Thousands of burros and llamas are still engaged in competition with the railways transporting ore, wool, hides, coca, chinchona and other natural products from the interior to Arica and other ports, and carrying back into the mountains cotton goods, hardware and other merchandise of all sorts from England and France, and even more from Germany, as the Germans are rapidly assuming the lion's share of the trade. The distance by railway to Lake Titicaca is 325 miles. The burro trail is considerably shorter, averaging 250 miles, because the animals can climb mountains that are impassable for railway trains, and many men, women and even families spend their entire lives upon it. You can see them at the stations when they are resting, and from the car windows when the trail and the railway track run in parallel lines. They trudge along, patient, enduring and oblivious to the value of time and the sense of fatigue.

The arrerios in charge of llama and burro trains are usually

accompanied by their entire families, and as their lives are spent in coming and going over the burning sands and the sharp rocks of the desert it is a matter of comparative indifference to them how long the journey lasts. The animals are the capital of the arrierio. The desert is his home. His wife helps in the driving and sleeps by his side on the sand. They have no tent or other shelter, but wrap their ponchos around them and lie down to pleasant dreams in the frosty air with their bare feet and legs exposed, while the ice forms in the little streams beside them.

Sometimes they are overtaken by snow-storms in the mountains, but they do not seem to suffer and are seldom known to perish in the cold, although they wade along in their bare feet. When you express surprise at their endurance those who have had experience in both continents remind you that in Canada and the northern parts of the United States people drive long distances with the thermometer at 40 below zero without covering their faces, and the boys snowball and skate in a very low temperature without freezing their hands or their heads. It is merely a matter of habit. The South American Indian bundles all the blankets he can find around his head and keeps his feet cool. The North American reverses the rule—keeps his feet warm and exposes his head and arms.

Children who are too small to walk, babies two or three days old, are allowed to ride on the donkeys when their parents are driving the train. They are born by the wayside like the lambs of the flocks, and no more fuss is made by the mother than you hear from the patient ewe. They spend the first years of their lives in a pannier on the side of a burro or a llama, where they roll around among the surplus clothing and cooking utensils of the family. For a change the mother wraps the babe in a poncho and slips it over her back, and when it makes a requisition for supplies she sits down by the roadside and issues rations from the bountiful commissary departments which nature has provided. Thus life begins for many an arrierio, and thus it ends. You see old men and women, as well as children, stumbling over the stones in the

dust of a llama train or a pack of burros whose weary, eventless years have been spent following those same animals, and whose first and only home is the mud hut in which sooner or later they must lie down and die.

It takes from twenty to thirty days, as I have said, for pack trains to travel from the seaports on the western coast of South America to the interior cities that lie in the puna, as they call the great basin between the two ranges of the Andes, and they carry everything. The steamers upon Lake Titicaca were brought piece by piece from Arica, a distance of 250 miles, on the backs of mules, and were put together on their arrival at Puno. The machinery in most of the mines had the same experience, and before the railway was built everything had to go that way. Nowadays transportation is comparatively easy and cheap. The freight charges on the pack trains are surprisingly low, even as low as those charged by the railway—from 20 to 25 shillings a ton for a distance of 300 miles or less. Mr. Grundy, who runs the smelter at Maravillas, tells me that they pay only 10 cents a load for ore brought in by the llamas, no matter what the distance may be.

A llama will bear 100 pounds and no more. He will carry his load of ore or wood or coca or other merchandise up and down precipitous pathways, where no other beast of burden can go, and where it is difficult for man to follow, but when he is overloaded he resents it and lies down. No amount of bullying or beating or coaxing can induce him to rise until the excess is removed from his back when he solemnly resumes his feet and marches off with his legitimate load. His cargo is packed in sacks or panniers, one-half on either side. Therefore all freight subject to this mode of transportation must be packed accordingly, and the packages limited to fifty pounds. Mr. Grundy says that the distance from the mine to the smelter or the railway station may be five or it may be fifty miles, the charge for transportation is always the same.

The reports from the custom house at Arica for 1898, the latest obtainable, show that 11,932 cargoes were transported by mules to Bolivia, 24,522 by burros and 25,999 by llamas, making a total of 62,456, having a total weight of 9,851,000 pounds.

As the average cargo for a mule is 225 pounds, for a donkey 150 pounds, and for a llama 100 pounds, the amount of freight thus carried over the desert and the mountains to the interior of Bolivia alone from that one port would furnish cargoes for 43,338 mules, 65,673 donkeys or 98,510 llamas.

It is quite probable that an equal amount of cargo was carried by the same means to the interior of Peru.

As the camel is to the people of the deserts of Asia and Africa, so is the llama to those who dwell in the Andes, a faithful, patient and enduring beast, docile, sure-footed and speedy, without which the inhabitants would be utterly helpless in some sections, for mules and horses cannot endure the high altitude and the rarefied atmosphere. Even the burros have their nostrils slit or large round holes punched through them in order to make it easier for them to breathe. When a horse is first brought into the high altitude of the Andes the blood drips from his mouth, ears and nose, and it takes a long time for him to become acclimated. Mules are more enduring and burros are better still, but the llama is native to the snow-clad peaks and thrives best where other animals find existence difficult if not impossible.

It costs nothing to keep llamas. They pick up their food by the wayside. It looks incredible to one who travels over the terrible deserts, but it is nevertheless a fact. Like camels, they can go a long time without food or water, and grow fat on amazing short rations at all times, but when the arrierio comes to a good piece of grazing he lets his animals linger and feed until they are satisfied. It may be an hour or it may be two or three days, if the grass is good and plenty. Time is no object, and the welfare of the beasts is very important.

Llamas are stately creatures, proud and dignified. Their little heads are always in the air, and their giraffe-like necks are proudly and gracefully curved. Their eyes are large, lustrous, intelligent and melancholy, and have an expression of suspicion or constant inquiry. Their ears are shapely and quiver continually like those of a high-mettled stallion, as if to catch the first sound of approaching danger. When frightened they

scatter over the desert in every direction, and when cornered they cluster in groups with their tails together and their heads out to meet the enemy. Their only weapon of defense is their saliva, which, when angry, they squirt through their teeth in showers, as a Chinese laundryman sprinkles clothes. A drop of this saliva falling in the ear or eye or on any part of the body where the skin is broken will produce a painful irritation and dangerous sores like the venom of a serpent.

The drivers keep them together by throwing coils of rope over their heads so that the neck of one is a hitching post for another. They are such fools that they will not run in the same direction, nor even in couples, but every one strikes out for himself when they become excited. When they lie down they fold their long and slender legs under them in some mysterious manner and chew their cuds with an air of contemplation and content. The kids afford excellent food, but old llamas who have been on the road a long time are rank and tough masses of muscle, tendon and gristle.

Although the llama is naturally docile and obedient, he has a furious temper, and duels take place in the herd which continue until one of the combatants, and often both, are killed. They bite and kick, and make a horrible noise, and when the weaker one tries to run away the stronger will pursue it and keep up the combat until death ensues.

They always go in packs, and will follow a leader, which is usually a pet animal decorated with bits of gay calico and ribbons braided in its wool. It carries a little tinkling bell around its neck, like a *madrina*, the gray mare that is usually found in every drove of mules. The *arrerio* or his wife goes ahead on foot or on a burro. The pet follows, and the pack follow him, stopping to graze as they go. If kindly treated, the llama can be trained to all sorts of tricks, like a colt or a lamb, but it is not naturally intelligent. It is one of the most stupid of animals. The female llama is never loaded, but is kept in the pasture. She costs about \$1.50 when young, and twice as much when in her prime. The males cost from \$2.50 to \$5, according to age and condition. A burro is worth from \$7 to \$10. An Indian who has twenty-five to thirty llamas or

burros is therefore well fixed and can make a good living. He is an independent transportation company all by himself, and can always find something to do. His rates of freight are fixed by a custom that is as old as the trail he follows, and are never changed. The value of money may go up and down according to the rates of exchange, but the charges for transportation by a llama train go on the same forever, and the arrierio insists upon being paid in Bolivian money, the little silver coin that was originally intended to correspond to a franc. This is said to be due to the fact that the Peruvian coins are counterfeited, while those of Bolivia are not. People say that in one of the villages on Lake Titicaca there is a man running a private mint and turning out Peruvian coins in large quantities. The Indians are aware of this, and therefore insist upon receiving their pay in Bolivian money.

Llamas are never ridden, except by children, who sometimes mount their pets, and unless they are very tame and well trained they will not permit even a child to climb upon their backs. Nor is the male llama ever sheared, although the female in the pasture is usually clipped in the spring.

The llama was the beast of burden of the Incas, and to its possession is attributed their superiority over and final subjugation of the neighboring races.

The vicuna, a sort of gazelle, a gentle, timid animal, is also native to this part of the Andes, and is found nowhere else. It has long soft silken hair of *café au lait* color, with a peculiar luster. In the days of the Incas, before the Spanish invasion, the vicuna wool was the exclusive material for the royal robes, and none but members of the imperial family and nobles of a certain rank were allowed to wear it. Ponchos that are 1,000 years old have been taken from the graves in the Inca cemeteries. The animal was protected by the laws of the empire, and was allowed to go unharmed in the mountains, where it accumulated in great numbers until remorselessly slaughtered for food by the Spanish invaders. The Indians expected that some severe penalty would be visited upon the Spaniards for this sacrilege, but divine retribution was withheld. The vicunas are now comparatively scarce, and very little of the

wool is shipped out of the country. The entire product is absorbed in making ponchos upon the native looms. The wool is so light and yet so warm that it is admirably adapted for that purpose, and a vicuna poncho is considered an essential part of the wardrobe of every gentleman. The Germans have succeeded in imitating it with great accuracy, but a native Bolivian is never deceived.

The guanaco is a cross of the vicuna and the llama, and is bred both for its fur and its flesh. It has many of the characteristics of the North American antelope, and the hide is invaluable to the Indians, particularly in the southern part of the continent, as it furnishes the material of which their garments are made. The guanaco fur, however, is never woven like the vicuna. It is never removed from the pelt.

The alpaca is said to be a cross of the llama and the sheep, but that is denied by zoölogists, who claim that it is also a native of this country and was abundant here before the Spaniards came. It certainly thrives nowhere else, and all of the alpaca wool that is used in Europe comes from South America. Some years ago an enterprising Australian by the name of Ledger attempted to transplant the alpaca to Australia. The export of the animal was forbidden by the Peruvian government, but Mr. Ledger succeeded in driving a flock across the Cordillera into Chile and shipping them from the port of Copiapo. Many of them died at sea. The remainder arrived in Australia much reduced in flesh and vitality. Within four years after their arrival the entire flock was extinct, because they could not live in a moist and warm atmosphere. The experiment has been repeated several times, with no better success.

The alpaca wool is claimed to be the finest in the world, the staple averaging twelve inches long and being sometimes twenty inches, while that of ordinary wool is not more than six or eight. An interesting story is told of the introduction of alpaca into British factories. It was used by the Incas and by the Spaniards after the conquest, and a considerable quantity was sent to Spain, but curiously enough the Englishmen never got hold of it, and although its superiority

was apparent, there was no demand for it in the wool market.

The story goes that about 1830 a Bradford weaver by the name of Titus Salt, while walking through the Liverpool docks one day, observed a broken bale of an odd-looking wool of intensely black color. He pulled out a handful, rubbed it, twisted it, tried to break it, and finally took it home and examined it more carefully. The next morning he returned to the dock, hunted up the people to whom the broken bale was consigned, and found that they had a number of bales of the same material, which they called alpaca wool, for which they had been unable to find a market. Mr. Salt took the whole lot off their hands for a nominal price, and spent a good deal of money in adapting his machinery to spinning and weaving it. This was the first introduction of alpaca wool into England, and practically the market in Europe although a limited quantity had been previously used in Spain. Bradford has continued to this day to be the center of the trade.

XVII

CUZCO, THE CAPITAL OF THE INCAS

Four hundred years ago Cuzco was the most important city in America, with a population of 200,000 or more, and a wealth that few communities of human kind have ever surpassed. It is now a dismal, dirty, half-deserted habitation of from thirty to forty thousand ignorant and indolent Indians with perhaps five or six hundred whites who own the property and conduct what little business is done there. Cuzco was the capital of the Inca empire, and the residence of a long line of kings who lived in splendid circumstances and were surrounded by a court of enormous riches and remarkable taste for art and architecture, considering the isolation in which they lived and their entire ignorance of the existence of other nations beyond the mountains and the ocean that confined them.

Each successive Inca is said to have erected a new palace at Cuzco, and more spacious than those of his predecessors and several erected temples and convents for religious purposes that rivaled the royal residences in extent and magnificence. It is almost impossible to believe the narratives of the writers who went there with Pizarro and witnessed the city before it was plundered and destroyed; but the ruins are mute witnesses of the opulence and power of the Incas, and go far to corroborate the stories that amazed the people of Europe in the sixteenth century and still seem fabulous to us. There are now in the city of Cuzco, for a population less than 40,000, thirty churches and eleven convents and monasteries. Seven of the latter, however, have been suppressed. The city is the seat of a bishopric and a university, which occupy structures of imposing character that were either the palaces or shrines of prehistoric construction or have been rebuilt from the ruins.

The church of the Jesuits, the cathedral, and the church of La Merced, which front the public square, are marvels of architectural beauty, and the courts and cloisters of the convent attached to the latter church are admirable in their proportions and are surrounded by colonnades of white stone elaborately carved, which in grace and harmony challenge comparison with the great cathedrals and monasteries of Europe. Within this church lie the remains of Juan and Gonzalvo Pizarro, the brothers of the conqueror of Peru, and those of Almagro, his partner in the conquest. There are other churches of imposing architecture built from the ruins of the Inca palaces and temples, which perhaps were more splendid in their day than anything that existed in the new world, but they are all the victims of time and negligence, and are crumbling to pieces.

Ninety per cent or more of the population are pure Indians, and the Quichua language, which was spoken by the Incas, is still in common use. In fact, the great majority of the people do not understand Spanish. The whites, who are comparatively few, are priests and monks, government officials, hacendados who live most of the time upon their estates in the valley, and a few foreign shopkeepers, mostly Germans. Some of the old families still retain ancestral homes filled with massive furniture, gilded mirrors and costly damask hangings that were brought to Peru 250 years ago, when it was the richest and the most extravagant country on earth, and when the nobility and wealth were concentrated at Cuzco. Most of these houses are in a state of advanced decay, for their proprietors are suffering from a hereditary and incurable disease called pride and poverty. Their estates have been ruined by neglect and the devastation of revolutionary armies, and their mines are no longer profitable because of the low price of silver. They lived on borrowed money as long as the bankers and commission houses would accept mortgages upon their plantations, and now nobody knows and many people wonder where they find the means of sustenance. Their pride will not permit them to work, and their poverty makes it impossible for them to develop the natural resources that lie dormant

in their property. Most of the money that comes into Cuzco now is sent to buy wool, for the mountains are covered with flocks of alpacas and other breeds of sheep whose fleeces command a high price in the foreign markets. A few enterprising foreigners contribute to the general welfare by operating copper mines, and if permanent peace could be assured, Cuzco might sometime recover its former prosperity; but I doubt whether the present population is capable of acquiring that human talent known as enterprise. If their ancestors had shown as much energy in the development of the vast riches that are buried in the mountains as they displayed in searching the ruins of the Inca edifices for gold and other treasure, there would have been permanent prosperity, and even now, after 350 years have been spent in digging for secret vaults and other places of concealment, the Spanish inhabitants of that part of Peru can always raise money somehow to pay the expense of chasing some wild goose that is supposed to lay golden eggs.

For example, on the road from Puno to Cuzco, at the summit of a hill, in the crater of a volcano, is a small and mysterious lake called Urcos, which has no outlet and no bottom. For more than three centuries the inhabitants of that region and many speculators from Europe have been plunging year after year into its icy waters to recover a golden chain that belonged to the Inca Huayna Capac, which was thrown in there to spite the Spaniards. This chain, according to the tales of the writers of the time of the conquest, was of pure gold, wrought into links about one foot in length and "as large as a man's arm." It was long enough to stretch twice around the grand plaza in Cuzco, which is nearly as large as Madison Square in New York, so that it must have been nearly half a mile in length. When Pizarro and his squadrons approached Cuzco the custodians of the Inca's palace fled with the women of the royal family, and carried with them such articles of value as could be concealed and transported upon the backs of the llamas. Before they had gone many miles they found the great chain of gold a serious obstacle to their progress, and the high priest, who seems to have been in charge of the

party, commanded the servants to cast it into the waters of the lake. The names of the priest and his companions who witnessed the act are given in the early chronicles, with all the details of the transaction, and an account of the efforts that were made to recover the treasure. Those efforts have been continued ever since, with more or less interruption. At one time a syndicate called the Huayna Capac Chain Recovery Company was organized, with a capital of \$5,000,000, for the purpose of boring a tunnel to drain the lake. After spending a large sum of money it was found that the mountain was composed almost entirely of living rock, so that the enterprise was abandoned.

It was at Cuzco, more than a hundred years ago, that Tupac Amaru, a descendant of Huascar, the last of the Incas, organized an uprising of the Indians to wrest the capital of his fathers from the hands of the Spaniards, and exterminate the foreign invaders of Peru. For a time it appeared that he might be successful, and that the banner of the Incas might again float above the massive walls of the great fortress, but he was betrayed and taken prisoner, and after being compelled to witness the execution of his wife and son, he was himself "quartered" by wild horses in the great square of Cuzco under the walls of three churches dedicated to a merciful God. This horror occurred on the 21st day of May, 1781, and was witnessed by a multitude of people. Iron rings were forged upon the wrists and ankles of the young Inca, to which four chains were attached, and each chain was hitched to a restive and powerful horse. When the cruel arrangements were complete the master of ceremonies cracked his whip at the frantic animals, and each started in a different direction, tearing the body of Tupac Amaru into four pieces.

Volumes have been written to describe the palaces, the temples and the fortresses of Cuzco. Prescott, a blind man, has written the most beautiful and accurate description that has ever appeared in print, and Prof. Adolph Bandelier, a famous archæologist, is still employed in a thorough investigation of secrets which science has not yet revealed. Professor Bandelier is engaged in exploring the ruins about Cuzco in the

interest of the New York Museum of Natural History, and the reports of his discoveries will no doubt be more valuable than any that have yet appeared, because he is working by the light of experience and an exact science.

Cuzco stands at an elevation of 11,380 feet above the sea. It occupies one of the most beautiful sites ever selected for a city, which, according to tradition, was chosen by Manco Capac and Mama Ocla, those mysterious beings who called themselves the "Children of the Sun," and appeared about the seventh century after Christ to teach the arts and industries of civilization to the savage Indians of the Andes, and founded a dynasty which grew in power and influence until it conquered nearly all that half of the continent of South America which lies west of the Andes. The climate of Cuzco is salubrious and healthful. Were it different, the accumulated filth of generations would make the city uninhabitable. There are no sewers, and all the offal from the houses is dumped into the streets. Within twenty miles down the valley, all the semi-tropical fruits and vegetables are produced, and although the soil in that vicinity has been cultivated for centuries, it still yields harvests of all the staples of the temperate zone. When Manco Capac laid out the city he divided it into four quarters by four roads leading to corresponding portions of the empire. Their direction was fixed by the configuration of the country, and they run from northeast to southwest, and from northwest to southeast, crossing in the central plaza of the old city.

In one of these quarters, on a hill known as Sacsahuaman, the first Inca built his palace, which was surrounded by temples, convents and fortifications erected for their protection. The nuns of St. Catilena now occupy the restored ruins of the palace of the Virgins of the Sun; the friars of Santo Domingo occupy a magnificent and extensive monastery, rebuilt from the walls of the Temple of the Sun, which was perhaps the most extensive, imposing and gorgeous building in America. The accounts of its splendor and riches that have come down to us from those who destroyed it are almost beyond belief. They said it was 400 paces square, which would be about 1,200

feet. Its high walls of finely dressed stone, enclosed courts, gardens, chapels, shrines and various other apartments for religious sacrifices and ceremonies. The cornices of the walls outside and in, the Spaniards say, were of solid gold, and at the eastern end in the great courtyard a massive plate of gold, representing the sun, spread from one wall to the other, which, according to the measurements of the court in which it is said to have been placed, must have been sixty feet in diameter. Before it, seated upon golden thrones and wearing the robes of their royal office were the embalmed and dessicated bodies of dead Incas; Huayna Capac, the greatest of the Incas, being honored with the place beneath the center of the symbol. The inner walls of the temples were covered with gold plate, and showed a high degree of artistic skill on the part of the native goldsmiths; the garden, 600 feet long by 300 feet broad, was filled with figures of men, animals, birds, reptiles and insects, of life size in the same precious metal. The walls of a dozen other temples and palaces, convents and fortresses still remain, and are utilized for modern structures, so that it is easy to define the outlines of the ancient city, and if the stories that its conquerors told are only half true they sheltered an accumulation of riches whose value is beyond computation.

There is very little of interest to the modern traveler outside these ruins, and the ecclesiastical edifices which the Spaniards erected upon them, and with the money plunder they contained. The market place, particularly on Sunday morning, is attractive to those who are unfamiliar with the manners and customs of the Indians of the Andean basin, but they are a sullen, reticent race, and lack the dramatic and picturesque characteristics that make the Amayra Indians of Bolivia so entertaining. There are several Americans living in Cuzco, two protestant missionaries, a dentist, a miner or two, and the men who are building a stage road to connect with the railway. The antiquated architecture and the purity of the climate make Cuzco a fascinating field for the amateur photographer, but few strangers are willing to spend the time and patience required to reach that isolated place. The hotel

is very bad, as bad as any one can find in South America, which is doubtless due to its limited patronage, but the proprietor endeavors to propitiate his guests by cordial attentions.

The railway runs east-north from Juliaca 122 miles to a town called Sicuani. There a cart road begins which was built by Mr. Patrick Hawley, an enterprising Irish-American, and continues a distance of eighty-seven miles to within fifteen miles of Cuzco. He has recently imported from the States two comfortable and handsome Concord stages, which run twice a week, making a journey in two days.

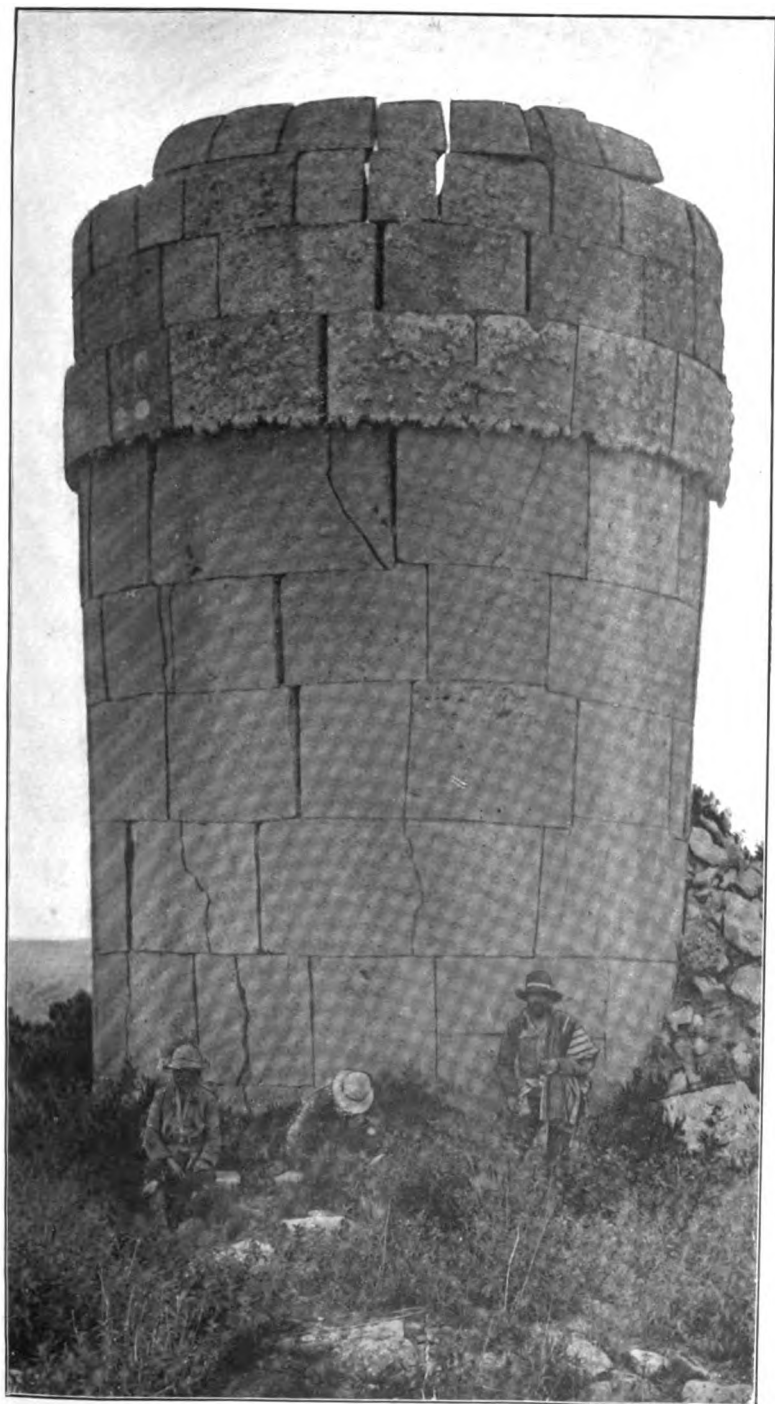
From the terminus of the present highway the traveler must ride into the City of the Sun on muleback over a horrible trail. But when the road is done this will be unnecessary, and the entire journey will be made by stage. Until Mr. Hawley undertook this enterprise no wheeled vehicle was ever able to enter the valley of Cuzco, and every article that came in and went out had to be carried on the back of a llama or a mule over a mountain trail that was almost impassable.

The Incas had a system of highways which Dr. Tschudi, the famous Austrian archæologist, declared "even in the existing state of our knowledge, and with modern instruments of labor, would be deemed worthy of the most civilized nation now on the globe." "Of all the ancient monuments whose ruins invite our attention," he says, "there are none which by their astonishing character, their immense extent and the seemingly impossible labor which their construction demanded, impress us more profoundly than the royal roads which traversed the entire empire from north to south." Pedro Cieca de Leon, one of the earliest writers, compares them to those which Hannibal made over the Alps, and says "the caciques and princes caused a road to be built fifteen feet broad, on each side of which was a very strong wall more than a fathom in thickness, while the road was very clear and smooth and shaded by trees." Lopez de Gomarra, another of the conquistadores, writes that "the royal roads from the city of Cuzco were a very costly and noble work, cut in some places from the living rock and in others made of stone and lime, for

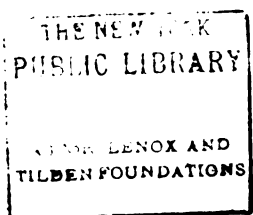
indeed it was necessary to cut away the mountains and fill up the valleys in order to bring the road to a level. It was a work which, as all agree, exceeded the Pyramids of Egypt and the paved ways of the Romans, and, indeed, all other ancient works. These roads went in a direct line, without turning aside for hills or mountains, or even lakes."

Pedro Cieca de Leon, writing in the seventh century, said: "The caciques and princes, by the Inca's command, caused a road to be made twenty-five feet broad, on each side of which was a very strong wall more than a fathom in thickness, while the road was perfectly clear and smooth, and shaded by trees; and from these generally hung over the road branches loaded with fruit, while the trees were filled with parrots and various other birds. In each one of the valleys there were built grand and princely lodging places for the Incas, and depositories for supplies of the army. Along this road the sidewalk extended from one place to another, except in those spots where, from the quantity of sand, the Indians were not able to lay solidly in cement; and at such places, that the way might not be lost, they drove into the ground large trees properly fitted after the manner of beams, at regular intervals; and thus they took care to make the road smooth and clear over the valleys. They renewed the walls whenever they became ruined or injured, and perpetual watch was kept to see if any large trees, of those in the sandy places, were overturned by the wind, in which case it was immediately replaced."

Lopez de Gomarra says: "There were two royal roads from the city of Quito to that of Cuzco, very costly and noble works. The one over the mountains and the other across the plains, each extending more than a thousand miles. That which crossed the plains was walled on both sides, and was twenty-five feet broad, with ditches of water outside, and was planted with trees called nolle. That which was on the mountains was also twenty-five feet wide, cut in some places from the living rock, and in others made of stone and lime, for, indeed, it was necessary to cut away the rocks or fill up the valleys to bring the road to a level. It was a work, which, as all agree, exceeded the pyramids of Egypt and the paved



Burial Tower of the Incas, near Cuzco.



ways of the Romans, and, indeed, all other ancient works. Guaynacapac restored, enlarged and completed them; but he did not build them entirely as some pretend, nor could they have been constructed in the whole time of his life. These roads went in a direct line, without turning aside for hills, mountains, or even lakes; and for resting places they had certain grand palaces which were called "tambos," where the court and the royal army lodged. These were provided with arms, food, shoes and clothing for the troops. The Spaniards in their civil wars destroyed these roads, breaking them up in many places to impede the march of each other; and the Indians themselves demolished a part of them when they waged war, and layed siege to the cities of Cuzco and Lima, where the Spaniards were."

But nearly all these wonderful highways were destroyed by the Spaniards, sometimes to prevent the Incas from following them and often from sheer wantonness. The Indians themselves demolished many of the embankments in order to impede the movements of the invaders, and time and neglect have done the rest, for the Spaniards never repair anything. Every monument, every public work they captured from the Incas was allowed to decay, and since their independence the Peruvians have been even more destructive and neglectful. When they entered the country the Spaniards found a civilization that was almost as advanced as their own, but so greedy and so avaricious were they that almost every temple and every palace was torn down in their search for treasure, and almost every stone was turned over in the hope that a jewel might be concealed under it.

There is likely to be a Klondike excitement on a limited scale in this part of Peru if the San Domingo gold mine turns out to be as rich as expected. It is owned by the Inca Mining Company, an American corporation, composed chiefly of oil operators of Bradford, Pa. Mr. Charles P. Collins of that State is the largest stockholder, and the manager here is Chester W. Brown, of Cleveland. An enormous amount of money has been spent in the development of the property, and the owners are confident that it will prove to be the most

profitable gold mine ever discovered, surpassing even El Callao of Venezuela, the Treadwell of Alaska, and other famous deposits.

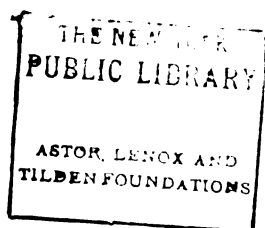
During 1898 and 1899 the managers were able to take out large amounts of ore by the primitive processes of the Indians, and since their machinery has been in place the output has been increased nearly fourfold. Part of the ore is sent to Europe in bags, part is reduced on the ground, and the bars are shipped to the mint in Lima for coinage. The great drawbacks have been the inaccessibility of the location and the difficulty of getting labor. Manager Brown sent to California, Nevada, Arizona and Colorado for white American miners, as the Indians are not only inefficient and intractable, but will not work regularly. As it usually requires two or three days for the Indians to recover from the effects of a holiday, the managers came to the conclusion that they must import competent and intelligent labor.

Furthermore, in the employment of natives they are entirely at the mercy of the local officials, who have organized a sort of padrone system among the Indians. When a miner, a haciendado, a railway manager or an employer of any kind wants a gang of men he is compelled to go to the prefect of the nearest town, who will furnish as many as are wanted at the rate of \$1 a head per month as long as they are employed. He becomes responsible for their good behavior and agrees to make them work full hours, according to the "*costumbre de la pais*." Those words, which mean literally "the custom of the country," have a wide significance, to which the native employer is accustomed by experience, but it is exasperating to a man who has been accustomed to do business in North America. Furthermore, if the prefect is not well looked after he decides every dispute in favor of the Indians and gives them the benefit of every doubt.

The natives in many respects resemble the colored people in our southern states. They have no idea of the value of money and work for small wages, an average of 60 cents a day in depreciated silver, but when they get a few dollars ahead they quit and loaf until it is expended. During this time they



A Peruvian Caballito, Canoe of Straw.



pretend to be sick, and the prefect usually accepts the excuse on the theory that it increases the prosperity of his town to have the Indians come in and spend their money for liquor.

The San Domingo mine is situated near a little town that bears the appropriate name of Perdition, over the Cordilleras on the Atlantic slope of Peru, near the Bolivian boundary, and until recently it could only be reached by a trail 150 miles long through a trackless wilderness from Tirapata station on the Cuzco branch of the Southern Railway of Peru.

Prospectors who desire to go into the San Domingo country must go down the west coast of South America as far as Mollendo, where they take the Southern Railroad for the interior. At the town of Juliaca they change cars for the Cuzco branch and leave the train at Tirapata, which is a little station 12,780 feet above the sea. There they can get a mule either by hire or purchase for the rest of the journey. The trail crosses the main range of the Andes at an elevation of 18,000 feet, and descends rapidly into the timbered slope that conceals the head waters of the Amazon. For two years the Inca Mining Company had 400 men employed in building a cart road to the railway, so that the company has been able to haul in machinery for a twenty-stamp mill. Until the road was built everything was carried in and out on mule back, and when the Americans first bought the mine it could only be reached on foot.

In addition to the stamp mill the company has a sawmill in operation, and has established quite a colony, including thirty or forty American miners. They now have a cattle ranch, a vegetable garden, and the little community has become self-supporting.

The vein was exposed by a landslide several years ago, and was discovered by an Indian cattle herder, who brought samples of the ore to his employer, a Mr. Velasco, and sold him the claim for ten cows. Velasco worked it in a feeble way for awhile, and then sold it for \$250,000 to a California miner named Harbison, who happened to be traveling down this way as an agent for the Standard Oil Company. Harbison interested Collins and other friends at Bradford in the prop-

erty, and sent down his nephew, Chester W. Brown, to take charge.

There are plenty of mines in that country of all kinds of metals, but the lack of roads and transportation facilities, the difficulties in securing labor such as I have described, the exactions of the petty officials in the interior who are so far away from the headquarters of the government that they are practically independent and exercise a despotic power over the people, as well as the severity of the climate, compel northern miners to earn the full value of every dollar they get out. There are only two smelters in Peru. One of them is at the town of Casapalca on the Oroya road, and the other is at Maravillas, on the southern road, which are operated at a great expense, because coal costs from \$20 to \$25 gold a ton, and is brought from Chile, England and Australia. There are large coal deposits on the shores of Lake Titicaca, and during the war with Chile the steamboats and the railways of the interior were entirely dependent upon them for fuel. But they have never been developed on account of the indifference of the owners and the difficulties I have described. The coal is an excellent quality of bituminous, and improves as the shaft is deepened.

Near the little station of Maravillas, which means "marvelous," on the Southern Railway, there is a mountain of which the most extraordinary stories are told. It is claimed to be a solid mass of ores of all varieties indiscriminately mixed, and as one citizen declared, "all you have to do is to blindfold your eyes, turn around three times, throw a little salt over your left shoulder, then begin to dig where your spade strikes and you can get any kind of ore you want—gold, silver, copper, lead, tin, antimony or anything else—and it lies right on the surface like gravel." The fact that this extraordinary mineralogical phenomenon has not been utilized, however, rather detracts from the interest of the story.

XVIII

FROM LAKE TITICACA TO LA PAZ

The eastern boundary of Lake Titicaca is formed by a colonnade of the loftiest mountains of the American continent, and the greatest continuous snow range in the world. The highest peaks exceed 20,000 feet—namely, Illimani, Mururata, Samaja, Huana-Potosi, Illampu, Sorata and Sunchuli. Illampu disputes with Aconcuagua the honor of being the highest peak in America, and, with the exception of Mount Everest, the highest in the world. The estimates and measurements of observers differ, and vary from 23,000 to 27,000 feet. But it is probably somewhere near 24,000. Illimani has an altitude almost as great, and the majestic Sajama reaches more than 23,000. Nowhere else within human vision can such a battalion of monsters be seen, and the beauty of their outlines on a bright, sunny day is beyond verbal description. They remind one of a procession of mighty icebergs, moving with majestic dignity behind a screen that is formed by the intervening foothills.

The slopes that lead to the lake are nearly all cultivated, and are cut up into little fields like a crazy quilt. As everything is reversed in this latitude, the northern slopes are the most fertile and the most productive, just as the northern sun is the warmest of the day, for you must remember that we are south of the equator. The water is intensely cold, and people who fall into it are certain to be paralyzed or seized with cramps because of the temperature unless they are immediately rescued.

In the center the lake seems bottomless. Chief Engineer Creighton of the steamer Coya told me that they had dropped a lead 354 fathoms near the island of Titicaca without finding

a bottom, and that is 1,770 feet. Professor Agassiz made more than 500 soundings during his explorations, and came to the conclusion that the waters now occupy what was once the crater of a mighty volcano, which in the center is still open to the center of the earth.

A curious phenomenon is that metal never rusts in the waters of Lake Titicaca. You can throw in a chain or an anchor or any article of ordinary iron and let it lie for weeks, and when you haul it up it will be as clean and bright as when it came from the foundry. And, what is stranger still, rust that has been formed upon metallic objects elsewhere will peel off when immersed in its waters. This is frequently noticed by railway and steamship men. Rusty car wheels and rails, and even machinery, can be brightened by soaking them in the waters of Lake Titicaca.

The shallow bays and inlets of the lake show a film of ice almost every morning of the year, although at noonday the sun is very hot. The difference in temperature at 2 o'clock in the day and 2 at night is often 65 degrees, and will average 50 degrees for the entire year. Nevertheless, there is no means of heating the houses, and the natives believe that artificial heat is unhealthy. The cold is not felt so much as in lower altitudes.

Near the port of Puno, the metropolis of the lake, a commonplace Spanish-American town, which has a large commerce in wool and ores, and is the terminus of the railway, lies the island Estaban, upon which Prof. James Orton, of the University of Ohio, lies buried. Professor Orton was a distinguished naturalist and ethnologist, and spent several years in the exploration of the Andean ranges. He twice crossed the continent from the Pacific to the waters of the Amazon, once through Ecuador and again through Peru, and the last years of his life were spent in archaeological investigations among the Inca ruins upon the shores of Lake Titicaca. He died of dysentery in a small sailboat which he had chartered to bring his collections for shipment at Puno, and his body was laid on Isle Estaban, because, being a protestant, he was denied interment in the regular burying grounds. He has the com-

pany of three Englishmen and a German, who were also buried there for the same reason.

Tacilla Island is the penal colony of Peru, and large barracks have been erected by the government for the entertainment of political prisoners. It is said that a number of gentlemen who now have the honor of holding office at Lima have spent more or less time at Tacilla while their political enemies were in power.

Near by are two smaller islands which are peculiar because of the fact that one is covered with black gravel and boulders, and the other with white gravel and boulders. They lie so close together that it is possible for a man to throw a stone from one to the other, and their geological formation is exactly similar, but strangely enough not a white stone can be found upon one and not a black stone upon the other.

The greatest interest, however, centers in the island of Titicaca, which is at once the Eden and the Nazareth of the Inca traditions. There fell the first rays of the sun to illuminate and revivify the world after the deluge, and there appeared the Adam and the Eve of the Inca dynasty, the Children of the Sun, to redeem and regenerate the barbarians they found in this great region. It was somewhere about the seventh century of the Christian era that a man and a woman appeared one morning in the presence of the astonished natives on the island of Titicaca, and informed them that they had been sent by the great Creator, the father and ruler of all things, who inhabited the sun, to lead them into a better life, to teach them the knowledge of useful things, and improve their condition. Previous to the arrival of these missionaries the Peruvians were divided into rude and warlike tribes, ignorant of all industry and culture, knowing no law and no morals.

In some of the surrounding tribes in Bolivia and on the sea coast of Peru there was a certain degree of civilization, and the evidences of their progress are found in ruins that are scattered over the land, some of which must date back as far as the Christian era. Indeed, certain archæologists who have spent years in exploration here assert that there were four distinct races and historic periods antedating the begin-

ning of the Inca dynasty, all of which reached an advanced state of civilization compared with that of the Indians of North America and the tribes that surrounded them. Indeed, in their architecture, their religion, their knowledge of agriculture, irrigation, roadmaking and other sciences, they equaled, if they did not surpass, the races of northern Europe at the same period.

According to the story, when the Merciful Father, the Sun, sent his favorite children to redeem the Indians of the Andean basin, he gave them a rod of gold, which they were to drive into the ground wherever they stopped, and whenever they reached a spot where it entered the earth without pressure there they were to remain and erect a city, organize a government and establish a court.

From the ridge of Huanancauri these Children of the Sun started northward, gathering the people around them in great multitudes to receive as gifts from heaven the counsel and instruction which they brought by order of the Supreme Being, their Father, until they reached the present location of the city of Cuzco, where the rod disappeared and they founded their capital. Manco Capac taught the men agriculture, industry and the useful arts. He established a social and political union among all the wandering tribes, convinced them of the blessings of peace, combined their forces, inspired them with ambition, and by adequate laws gave them a wholesome and enduring happiness and a prosperity which has never since been enjoyed in Peru. Mama Oclla taught the women the domestic arts and virtues, grace, chastity and culture, and from her and Manco Capac sprung the dynasty of the Incas, which lasted nearly 1,000 years, and exercised authority equal that of the most powerful monarch in the world. To their autocracy was allied a tender affection for their subjects, a genuine anxiety for the good of the people, and an unselfish desire to enable the barbarous nations which they conquered to participate in the advantages of civilization.

There are, of course, many theories to account for the miraculous appearance of these benefactors and redeemers of the Peruvian race, and the early explorers of Peru, like those

of Mexico and Central America, were strongly of the opinion that Manco Capac, like Montezuma, was a Buddhist priest who somehow had crossed the Pacific, and by means of his superior learning and abilities was able to control the minds of the natives and elevate himself to political supremacy. The Scandinavians claimed that fair-haired Norsemen invaded and conquered the southern as well as the northern continent, and a learned rabbi, Manasseh Ben Israel, in a celebrated work, which was published in Amsterdam in 1650, made it very clear that Manco Capac was a Jew, whom Salmaneser, the king of Assyria, carried away captive from Jerusalem. According to Cabrera, a learned Moorish writer, the founders of the Peruvian dynasty were Carthaginians who crossed the ocean in search of adventure, and a pious writer made an ingenious argument to prove that Manco Capac was identical with the apostle St. Thomas. Marco Polo declares that the first Inca of Peru was the son of Kublai Khan, and Baron von Humboldt joined the long procession of theorists to prove that the Peruvians obtained their education from the Huns.

There are remarkable analogies between the religion of the Incas and Buddhism, and in the interior of Thibet, where the purest Buddhism predominates, are usages which resemble the practices of the Amayra Indians in a most remarkable manner. Similar analogies are found in a comparative study of the Christian religion; but whatever the origin of the Children of the Sun may have been it is certain that Manco Capac and his sister laid the foundations of a public happiness and a material prosperity of which for four centuries their descendants have been deprived. It is equally true that the invaders of the country disturbed a peace, destroyed a culture and overthrew a government whose aspirations and ideals were beyond the conception of Pizarro and the cut-throats that followed him from Spain.

The island of Titicaca, famous as the birthplace of the oldest civilization in America, is now the property of Mr. Miguel Garces of Puno, who has a handsome hacienda there. A village of 700 or 800 Indians are living in mud huts, and raising wheat, barley and potatoes among the ruins of an age and a

culture which the archæologists of modern times have found a most fascinating problem. The island lies a mile or so from the main shore, from which it is separated by a bottomless channel. The nearest port is the little town of Calle. There is no communication except by balsas, the curious craft which are older than history and were used by the Incas, as they are used by the Indians to-day, for transportation. They are built of barley straw, tied together in bunches, and then bound by wisps in the shape of a catamaran.

The body of the balsa is three or four feet in thickness. The ends are turned up in a rather artistic manner and ornamented with considerable taste. They are very light, and one of the largest size can easily be lifted by two men, but they are so buoyant that two or three tons of freight can be easily transported by them, and as many passengers as can find room aboard. The Indians navigate them both with oars and with large sails made of woven straw in a curious and ingenious manner. On the coast of Ecuador and Peru the balsas are made of a porous timber almost as light as cork, but there is no timber of any kind in the Andean basin except a few stunted pines that grow in a most unaccountable manner among the rocks.

A caballito is a small balsa or canoe made of straw, which is propelled by paddles, and the navigator, sitting astride his craft, sends it across the water with great skill and speed. These cabillitos were used in the days of the Inca empire for the transportation of couriers along the lake. The balsas are the best of lifeboats, because it is impossible to sink or even overturn them, although they are so light as to be affected by every motion of the water, and persons unaccustomed to using them become seasick in a moderate breeze.

The Indians who inhabit the island are usually docile, industrious and are compelled to wring a scanty living from the unwilling soil, except upon the northern slope, where the wheat, barley and potatoes and a few vegetables feel the warmth of the noonday sun more than upon the other slopes. There is a little chapel, attended by a native priest, and the Indians are very assiduous in their religious duties, although



Balsas, Lake Titicaca.

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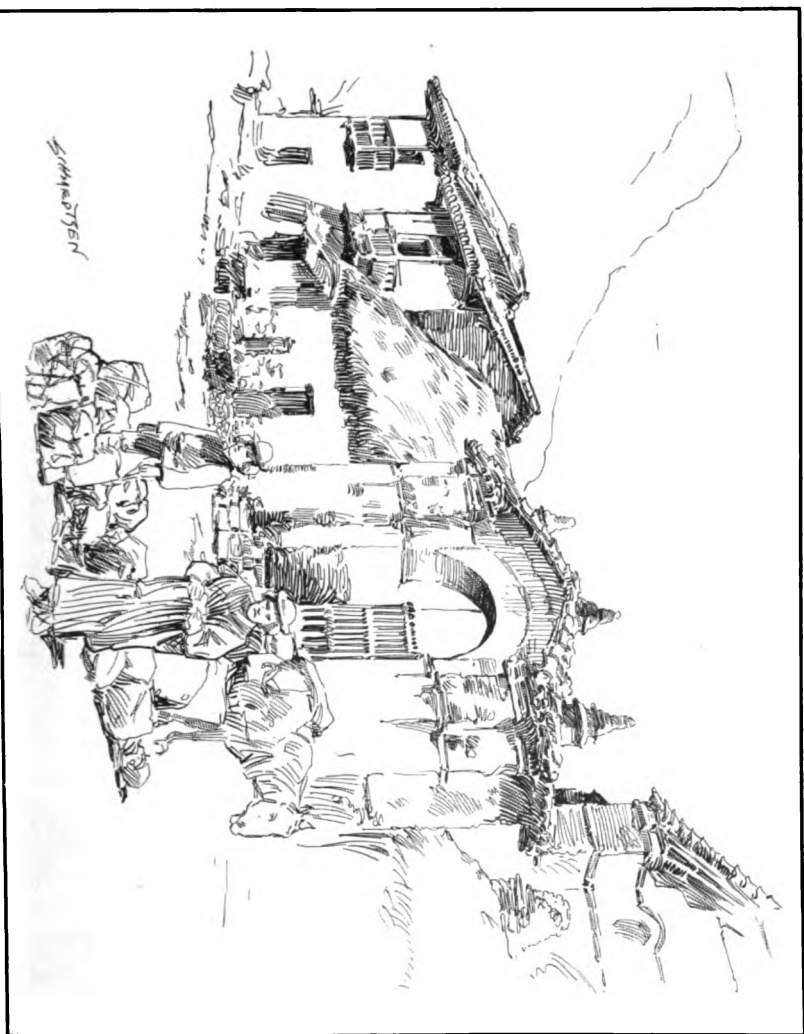
they still retain many of the rites of their aboriginal religion.

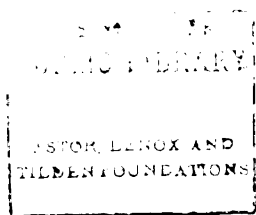
The ruins of palaces and temples which formerly covered this sacred place have been the object of investigation by archaeologists for several centuries—ever since they were destroyed by the Spanish invaders—and much of the material used in their construction, which was sandstone cut in the neighboring mountains and brought across the land and water with infinite patience and labor, has been carried away for building purposes both upon the island and the mainland. It is remarkable that even one stone has been left upon another during the 360 years since the Spanish conquistadores invaded the peaceful precincts of the place, for they destroyed everything they laid their hands upon, and during the last century archaeological explorers in searching out the secrets of the extinct civilization have made extensive excavations and overturned nearly everything that the Spaniards left.

If we are to believe one-half of the reports that were made by the knights and chroniclers that accompanied Pizarro the temples and palaces were of an extensive and sumptuous character. To the Incas the island was a sacred place. It was the seat of the ecclesiastical jurisdiction, the residence of the exalted prelates and priests, who spent their lives in worship and in the observance of ceremonials which have been described in the most elaborate manner by early Spanish writers. The temples and palaces and monasteries were built of carved stone. The quarries from which it came and the method by which it was brought are still unknown, although scientific research has demonstrated that the Incas had no means of transportation on land except the llama, and none upon the water except the balsa. It is believed, however, that the material for their buildings was moved from the quarries to the shores of the lake upon rollers and there transferred to the primitive boats, by which it was carried across the channel, and then transported up the steep hillsides to the central summits of the island by manual labor, for the Spaniards learned that thousands of Indians were detailed annually for employment upon the public works of the government.

When the Spaniards came these buildings were filled with valuable accumulations of gold and silver for both ornamental and useful purposes. The walls were covered with beaten sheets of gold, and the altars of the idols were adorned with objects and vessels of the same metals ingeniously hammered into shapes by the primitive processes of that period. Tapestries woven of vicuna wool in unique and fanciful designs added beauty to the interiors, and upon the floors were spread the skins of wild beasts found in the forests upon the eastern slopes of the Andes. Millions of dollars' worth of treasure was carried away by the invaders, who after a few months left the splendid edifices roofless and dismantled.

The emperor, or the Inca, as he was called, is supposed to have spent a certain portion of each year in a palace that was adorned and reserved for his use, and the remains that still exist indicate the extent and the grandeur of the buildings he occupied, although the scientists say that viewed externally they did not present as imposing an aspect nor show so high a degree of architectural skill as those of Yucatan. The walls were admirable for the skill of their construction, but they lacked columns, cornices and other architectural embellishments which are found in similar structures in Central America. The internal arrangements offer a greater complication of detail and more interest. There were several large salons that were probably used as audience chambers by the monarchs and the priests and for purposes of courtly ceremonials and religious worship, but most of them had but one door, opening into the courts that surrounded them. The walls were often carved with hieroglyphics commemorating events in the history of the nation, which were admirably executed, and some of them have been deciphered by modern skill. It is asserted that the massive walls of these apartments, the ceilings and even the floors, were covered with plates of gold, which was the principal cause of their destruction. In others the floors were adorned with pavements of marble of different colors, like mosaic work, and in the niches the Spaniards found statues of gold and silver representing gods and all sorts of animals and insects.





The monasteries were also large edifices containing similar apartments and innumerable small rooms, which were doubtless occupied by the priests and their attendants, and some of them were spacious enough to furnish accommodations for 1,000 persons.

Among the best preserved of the ruins are the royal baths, which were as sumptuous as those of Italy or Greece at a similar period, and their exposure has suggested that there must have been a change in the climate since the time of the Incas, or else the aborigines were a much more enduring race than their posterity. The baths were built of carved marble. The bottoms were carefully covered with a mixture of small stones and a species of cement, and the water was received through golden figures of animals, lions, tigers, eagles, condors or snakes, either carved in marble or wrought in gold or silver, which threw the water from their mouths from pipes of metal or stone. The baths, which lie upon the open hillside, are surrounded by ruins of small apartments, which seem to have been used as dressing rooms, and were also ornamented with statues of stone and metal.

Among the golden ornaments carried away by the Spaniards were hollow statues representing animals, birds, trees and bushes of natural size, imitations of sacks, baskets and sticks of gold that were in the form of billets of wood collected for burning. Both the baths and the palaces were surrounded by gardens, in which were growing trees and plants that were evidently brought from the forests of lower latitudes.

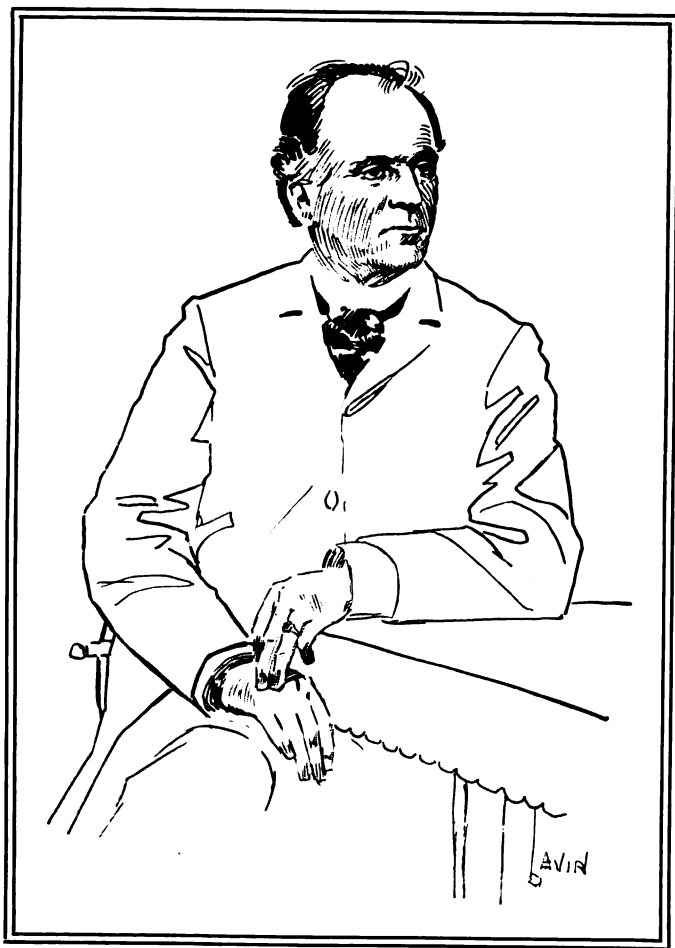
Upon the island of Coati, which is six miles distant from Titicaca, was the harem of the Inca, where the remains of the buildings are in a much better state of preservation than those upon the island of Titicaca, and the principal walls remain almost intact. This island was dedicated to the moon, and in the convent were many young women selected for their beauty and their lineage for concubines of the monarch by a method similar to that formerly in vogue in Japan, and which still exists in China.

Under the direction of competent superiors these wives of

the monarch were taught the sacred duties of their office. Their occupations were spinning and weaving the garments of the Incas from the finest vicuna wool, in brilliant colors, and embroidering them with gold and precious stones. They were also obliged to weave the garments and vestments worn by the priests in the religious ceremonials, and also to prepare the chicha and the sacred bread of corn, called "zaucus," for the monarch and his court.

The palace of the harem was also richly marbled and adorned with as much taste and luxury as that upon the other island, and the Inca is said to have conferred honors and privileges upon these cloistered women which had the honor of attending his royal chamber until they reached the age of retirement, when they were permitted to return to their homes to spend the remainder of their lives in luxury at the expense of the government. The moon was considered the sister and the wife of the sun, and hence Coati was dedicated to its honor. The moon, however, was not worshiped like the sun, although it was considered the protecting deity of women in childbirth.

Like the oriental monarchs, the Inca had an unlimited number of concubines, but only one legitimate wife, or empress, who was called "coya," and was always one of his sisters. This concentration of the blood was intended to impress a distinction of physiognomy upon the royal family. The throne belonged to the eldest son of the coya, and is said to have passed without interruption from father to son during the entire period in which the Inca dynasty flourished. The children of the concubines were educated for the priesthood and became officers of the royal household, the highest nobility of the kingdom. It is said that at the time of the Spanish invasion the harem at Coati contained 700 women, each of whom had several servants, and Garcilasso, a nephew of the last of the Incas, who was educated in Spain and wrote a remarkable volume concerning the court of his uncle, declared that some of the Incas left more than 300 children. At the time of the Spanish invasion the court of Atahualpa and his brother, Huascar, who divided authority with him by the



Adolp F. Bandelier, Archeologist.

decree of their father, contained more than 8,000 persons of royal blood.

The island of Coati, which is much smaller than Titicaca, is now a sheep farm inhabited by a single family. Within the last few years a mine of coal has been discovered upon it. It is an inferior quality of bituminous coal, but has been used for steaming purposes, and during the war between Chile and Peru, when the ports were blockaded and no other fuel was available, it was the only fuel available for the steamers upon the lake.

Mr. Adolph Bandelier, the famous Swiss archæologist, whose work in Mexico and among the Pueblo Indians in the southwestern part of the United States has given him a world-wide reputation, spent several months upon the islands of Titicaca and Coati, making excavations among the ruins and attempting to ascertain from the Indians residing there the traditions of their race. At first he was kindly received, having the indorsement of Mr. Garces, the owner, but he found after a time that the Indians regarded his work with great jealousy and suspicion, and before long showed an active hostility, which he believed to be due to their reluctance to permit the ruins and the soil, which to their eyes was sanctified by so many traditions and associations, to be disturbed by a foreigner.

It was also very difficult for him to induce the natives to discuss the traditions of their race, or to explain the significance of the rites and ceremonials which they often practiced. During the latter part of his stay his life was so frequently threatened that he was compelled to abandon his work. The Indians would not dig in the ruins any longer and would not permit him to do so, and for several days he was compelled to remain in a hut that had been assigned for his accommodation, subsisting entirely upon tea, chocolate and a few provisions which he had fortunately stored away for an emergency.

He had no means of escape or communication with the outer world, and his situation was becoming desperate when he was rescued by a priest from the mainland, who happened to visit the islands in the performance of his parochial duties.

Fortunately, however, during several months of labor Mr. Bandalier was able to make large and important archæological collections, which were rescued from the Indians by the priests of the neighboring town of Cococabana and are now safely deposited in the Museum of Natural History at New York.

Mr. Bandalier's reports will deny many popular theories concerning the aborigines and prehistoric conditions of Peru, and will doubtless furnish material for interesting controversies in the scientific world. He does not accept, but contradicts the testimony of the early explorers upon most important points. For example, he acquits the Spanish conquistadores of the awful accusation under which they have been resting for three centuries, and declares that the alleged depopulation of Peru is a myth, for it did not occur after the so-called conquest, nor as a result of the conquest itself. Robertson in his history, the pious Las Casas, who was known as the apostle of the Indians, and other writers upon early events in America caused perpetual horror in the civilized world by their statements concerning the slaughter of the innocents who occupied these mountains, and which were based upon the unoccupied habitations and the ruins that extend through the valleys, the mountains and along the shore of the sea. Mr. Bandalier declares that this was a serious mistake, and that the ruins were occupied by successive and not contemporaneous communities. At the time of the arrival of the Spaniards he asserts that the most extensive settlements along the Peruvian coast were either completely or at most partially abandoned; that the site of the great city of Cajamarquilla was not only deserted but even forgotten by the natives at the time of the invasion; that Pachacamac was half in ruins in 1532, and that the enormous Chimu nation on the arrival of Pizarro had dwindled to a single modest village, at a site called Manische, a mile or so distant from the ruins near Truxillo, which are the most extensive in South America. Mr. Bandalier attributes the disappearance of this population to constant warfare between the Incas in the mountains and the inhabitants of the valleys on the coast.

One tribe, he says, slaughtered another and wrecked its abodes, which were never reoccupied.

The publication of reports with such iconoclastic tendencies is likely to create a sensation in the scientific world, for Mr. Bandelier's opinions and conclusions differ so widely from those which have been advanced until this time by generations of explorers, and have been almost universally accepted. Nevertheless, his fame as a scientist and his reputation for accuracy, as well as the thorough manner in which he has conducted his investigations, give him the right to be heard.

During all his explorations Mr. Bandelier has been accompanied by his wife, a beautiful young Swiss woman whom he married shortly after his arrival in Peru. She has been his constant companion and collaborator, and he generously attributes to her the greater part of his success. Her beauty and tact have enabled her to secure the confidence of the Indians where no ordinary woman would have been able to do so, and her courage and endurance during the dangers and hardships they have encountered have been phenomenal.

I asked Professor Bandelier who was Manco Capac, the mysterious founder of the Inca dynasty.

"He was not a Hindu Brahmin, nor a Chinese mandarin, nor a wandering Jew, nor a Phœnician," he replied. "There is no reason to believe that he came from outside the Andean basin, although it is impossible to determine his origin accurately. It is more than probable, however, that he was some strong character who emerged from the masses and asserted his individuality. By reason of his superior ability and genius he changed chaos into order and redeemed his race, who idealized him, and either voluntarily or involuntarily endowed him with divine attributes. He claimed to be the offspring of the Sun, the great creator—the symbol as well as the source of life and light and happiness. Every race has a redeemer, or a founder, whose origin and existence is more or less involved in mystery—the Thor of the Norsemen, Mahomet, Zoroaster, Buddha, Confucius, Romulus and Remus, Adam, Moses and Christ. Manco Capac in the traditions of the Incas was a similar character."

When the Spanish invaders entered this country they wondered at the manner in which their movements were anticipated by the natives. Every act appeared to be instantly communicated over the entire empire almost as swiftly as if sent by telegraph. After a few months they discovered that there was an organization of runners who carried the news with amazing speed over the snow-covered mountains and across the scorching sands. These were known as *chaquis*, and were selected by reason of their physical qualifications and trained for speed and endurance. When they became incapacitated by age or accident less arduous duties were given them in the army or about the court.

As the Incas had no written language their messages were always oral, so the memories as well as the muscles of the *chaquis* were trained. Sometimes the Inca communicated with his subordinates in other parts of the country by signs—a ring, a piece of molded clay or a leaf might be transmitted—which meant nothing to the man who bore it or to the people who saw it in his hands, but was very portentous to him for whom it was intended. As proof of the speed of the *chaquis* it is said that the royal table at Cuzco was often served with fresh fish caught in the sea fifty or sixty hours previous—a distance that now requires from six to ten days to travel by railways and stage. Along the highways and the mountain trails, at frequent intervals, were established station houses, usually erected upon hillocks and other points of observation from which the approach of messengers could be detected. As one arrived, heated and breathless, a fresh *chaqui* would be ready to receive the message and carry it to the next station without an instant's delay.

The *chaquis* still exist, but they are no longer organized and there is little use for them. In time of war they are useful, as they have many of the instincts and much of the skill of scouts, and being familiar with the byways as well as the highways are able to slip through the lines of the enemy without danger. Some years ago I saw a *chaqui* named Qualnapambo (bird-chaser), who was very swift of foot and almost incapable of fatigue. He had been employed for sev-

eral years by General Caceras, then president of Peru, and had carried a message 250 miles without rest or sleep through the enemy's country, and had returned with the answer within a week.

The chaqui never carries food with him, but depends entirely upon the coca leaf; nor are his movements impeded by clothing. He goes as nearly naked as possible, but carries a poncho and paints his legs with a vegetable dye as a protection against poisonous vines and the bites of insects.

The little port of Chillilaya handles more than one-third of the entire foreign commerce of Bolivia. It lies at the southern extremity of Lake Titicaca, and is reached by a weekly steamer from Puna, the terminus of the southern railway of Peru. La Paz, the actual capital and commercial metropolis of Bolivia, is forty-five miles across the plains. The road is almost level the entire distance, and lies at an elevation of 12,500 feet above the sea. There is a weekly stagecoach, a lumbering vehicle drawn by eight mules and driven by a Jehu whose language and gyrations are calculated to occasion great alarm among nervous people who do not know that mule drivers in South America always act that way. Beside his long whip, which is handled with great skill and accuracy, he carries a bag full of small stones as an auxiliary, and shies them at the leaders with an aim that David himself could not have excelled. Indeed, he can touch the tip of the ear of the leader of his eight mule team nine times out of ten with a pebble not bigger than a pigeon's egg, and can hit any other part of the body of any other beast in the team with unerring skill. Passengers who are in a hurry to reach La Paz prefer to hire a private "coach," as they call it, and are furnished with a team of four mules and a vehicle similar to those known as democrat wagons in the United States. It is protected by a canvas cover, but the curtains are always loose, so that they go flapping around in the air in a most reprehensible manner. Nobody seems to know when or where these "coaches" were constructed, but the material is strong and the workmanship more than usually good, or they could not endure the hard usage that is assigned them.

The road is the best I have seen in South America, but for the greater part of the way is covered with bowlders that vary in size from a baseball to a washtub, round and smooth, and they are strewn from one end of the journey to the other. There are several water courses across the great plateau, which are filled with similar bowlders many layers thick—indeed, so deep that it would be difficult to find the bottom. It seems as if all the bowlders in the world had been collected and dropped along that roadway. Mr. Bandelier says they were dropped by the glaciers that passed over this plain ages ago, and the liberality with which they were distributed is commendable. The entire surface of the earth is strewn with them. The patient natives have gathered them into piles as big as hay stacks, and in long windrows, and have made fences of them so that they can cultivate the soil underneath, but a large share have been thrown into the road, and our good-humored "cochero" hustles his mules over them with a speed that would have made Jehu blush for mortification; and the rougher the road the faster he drives. Whenever something breaks about the wagon he gets down and ties it up with a string or a strap, and then resumes his reckless career. There is no use in trying to stop him. The lean and hungry-looking animals that compose his team are accustomed to gallop the entire distance and would not understand what he meant if he tried to moderate their speed, so all the passengers can do is to cling to the iron rods that support the canopy of the wagon and shut their eyes against any possible catastrophe. The teams are changed twice during the journey at haciendas of adobe that stand by the roadside, surrounded by high adobe walls and high stacks of barley straw, and refreshments are served to the passengers as ordered.

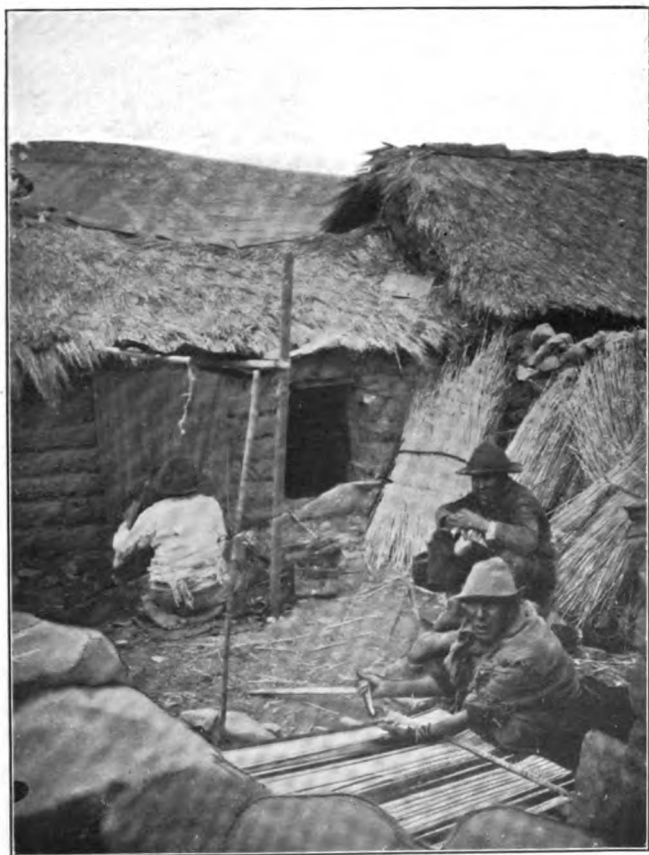
Chillilaya is a little town of low mud houses on the brink of the lake, with a panorama of majestic snow-clad mountains around it. There is no more imposing scenery in the world. At least seven peaks exceeding 20,000 feet in height, stand in review, with sierras of lesser altitude between them, and furnish an impassable barrier between this great plateau and the more fertile slopes that lead to the headwaters of the Amazon.

An enormous amount of business is done at Chillilaya. The steamers on Lake Titicaca land their cargoes of merchandise upon a long stone pier, from which it is carried on tiny cars to a custom house, where the captain of the port, with a gorgeous uniform and autocratic ways, directs the energy of hundreds of picturesque Indians, with long hair, quaint hats and the ever-present ponchos. He is a person of great importance, this captain of the port, for the revenues of the republic largely depend upon his vigilance. He examined our ordinary luggage with haughty indifference, but laid the typewriter, the banjo and the kodak to one side as objects of doubtful propriety, and it took him a long time to determine whether he should impose a heavy duty upon them or even admit them at all. The kodak he was evidently acquainted with, but showed great interest when its purpose and method of manipulation were explained to him. The typewriter was the source of wonder, not only to him, but to all the natives, who suspended business for a time and stared at it with amazement, as if it were some infernal machine which we were trying to introduce with evil designs into the country; but the banjo was regarded with even greater suspicion, for its like was never seen in Chillilaya before. Finally, with many misgivings, this important official accepted the explanation and guaranty of Mr. Creighton, the Scotch engineer of the steamer Coya, and allowed us to place the three mysterious articles in the coach that was ready to receive us.

Large troops of mules, burros and llamas were standing about the area in front of the custom house awaiting their burdens, for nearly all the commerce between Chillilaya and the interior is conducted by that means. There are a few huge carts drawn by teams of six and eight mules passing to and fro between Chillilaya and La Paz, which carry lumber, machinery and other heavy freight. But there are no railroads and few wagon roads in the interior, the total length of all the highways that can accommodate a carriage in the entire republic being 720 miles. These roads connect the principal cities of La Paz, Oruru, Cochabamba, Sucre and Potosi. They were constructed by the government and are maintained in the

same way as the country roads in the United States. All male citizens between the ages of 18 and 60 are obliged to work upon the roads one day in each six months, or pay in lieu thereof 50 cents in silver in order that a substitute may be employed. Thus the few highways are kept in passable condition, and communication by stage and wagon between the principal cities in the great Andean basin is maintained; but when one leaves that plateau one is compelled to depend entirely upon the use of pack animals, mules, donkeys and llamas, which toil up and down narrow and tortuous trails and wend their way through the deep gorges, over rocky passes and around the sharp and precipitous angles of the mountains, bearing their burdens of ore, coca, coffee, wool and other natural products to the commercial markets, where they are exchanged for flour, dry goods, alcohol and other imported merchandise.

Like the rest of the great plateau which lies between the two ranges of the Andes, the territory from Lake Titicaca and La Paz is divided into a few enormous haciendas or farms, which are dotted with groups of mud huts that are occupied by the tenants who till the ground and herd the sheep and cattle, and their ancestors have occupied the same miserable quarters for generations and even centuries. The system of farming in Bolivia is not unlike that of Ireland, and one is constantly reminded of the emerald isle when traveling through this country, but in Bolivia the tenants pay no rent. Each has a little patch of ground which he cultivates, as his ancestors have done, upon shares. The landlord furnishes him a team of mules or oxen and the primitive implements to which he is accustomed, and advances him a certain amount of supplies from the store at headquarters, which are charged against him, and when he brings in his harvest he is credited with the value of his share. Or, if he is a shepherd, he receives as compensation for his labor in attending the flocks a certain proportion of the wool and a given number of lambs, and once a year there is a settlement at headquarters, in which he usually comes out behind. He is always in debt to the patron, as his employer is called, and the laws of the



Bolivian Farmers.

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country require him to live in a state of peonage and serve that master until the account is settled. Sometimes he wanders from his home to a different part of the country, and may remain away for months or years, but his family seldom goes with him, and the wife and sons and daughters continue to cultivate the little patch of ground and look after the little herd of sheep or cattle without his assistance. The patron may send for him and have him brought back by the police or military authorities, and the expense of his capture and return are charged against him on the books at the hacienda. But this seldom happens. The relations between landlords and tenants are similar to those of the old feudal times in Europe. The former exercise a patriarchal authority over the Indians that live upon his lands, and they serve him with loyalty as long as he allows them a measure of independence. The haciendas seldom change hands. The property is inherited by one generation from another, and the customs of the country are so fixed and rigid that they are seldom violated either by the employers or the employed.

The mud huts of the tenants are usually found in little groups or villages, and occasionally among them you see a little chapel, which is attended by a padre, who exercises an influence among his parishioners even greater than that of the hacendado. In addition to his spiritual ministrations the curé is expected to maintain a school for the children of the parish, but in most cases his duties in this respect are purely theoretical, and the Indians remain untaught.

The methods of farming are primitive and the implements are rude. The soil is plowed with a crooked stick with one handle, drawn by a pair of bullocks, yoked by lashing a piece of wood behind their horns. The clods are broken by hand, usually by women and children, who follow the plowman, and the ground is harrowed by dragging a heavy slab or log over it. It is then cut into deep furrows, which serve the double purpose of drilling in the grain and irrigating the growing crop.

On this high plain little is raised but barley, wheat, corn and potatoes, and often the season is so short and cold that the

wheat does not come to maturity. When the grain is harvested it is thrashed by driving cattle over it.

The flocks and herds are a larger and more certain source of revenue than the soil. The sheep and alpacas seem to find sufficient nourishment in the scanty grass that grows upon these cold plateaus, for they are large of bone, well covered with flesh, and carry heavy fleeces. It is claimed that the higher the altitude and the colder the climate, up to a certain limit, the heavier the fleece, and sheep and alpacas will feed almost to the snow line, which in this latitude is 15,000 feet. Most of the herds are attended by women and children, as in the mountains of Peru, and scattered over the grazing grounds are rude shelters made of mud or brush to protect them from the bitter wind. The women and even the little girls in the fields all carry bunches of carded wool, which they are continually spinning into yarn with a curious wooden implement called a "rucca." Their hands are never idle. The rucca is a cylinder or spool of wood about eight inches long. One end tapers to a point, at which there is a little notch that holds the thread. They draw out the fibers from the lump of wool with their fingers to a proper thickness, and then with a deft twist whirl the rucca suspended in the air until the fibers are wound into a compact string. Then they wind it upon the spool, catch it in the notch and continue until the spool is filled.

This land has been cultivated for unnumbered centuries. During the Inca dynasty the territory was divided into three equal parts. One belonged to the Deity, another to the Inca, and the third to the people, and under an autocratic government a system of socialism was practiced with a fraternal equality and a peaceful prosperity that was never surpassed in any part of the world. Each adult was required to spend one-third of his time in labor for the Deity, one-third for the king, and the remainder for his own benefit, and the flocks were divided and cared for in a similar manner. The lands of the aged and the infirm and those of soldiers who were engaged in active service for the king were cultivated by their neighbors. Those who were in need of seed or implements were provided from the royal depositories. While human selfishness has

prevailed from the entrance of the serpent into Eden, it is asserted by the early writers that under the authority of the Incas the people of this region looked after the interests of each other with as much zeal as they devoted to their own affairs. The oldest son in every family was obliged to follow the profession of his father, the younger sons were permitted to engage in other business, to enter the army and to emigrate to other provinces, but not until the family were secure from poverty and the elder brother had demonstrated his ability to care for them. When the Spaniards invaded the country they seized all the land, divided it among themselves and made slaves of the people.

As the journey to La Paz approaches its end the traveler enjoys a startling surprise. The highway across the plateau leads to the brink of a vast canyon 1,100 feet deep, whose walls are almost perpendicular, and which in many respects resembles the Grand Canyon of the Colorado. At the foot of this mighty gorge lies the capital of Bolivia, and the first glance shows a wide expanse of red tiled roofs, occasionally broken by a bunch of foliage or a group of graceful spires. In the center of the city is a river that comes tumbling down from the mountains and is crossed by a series of picturesque bridges of massive masonry centuries old. This river, in the native Aymara language, is called Chuquiapa, meaning the river of gold, and the peculiar location of La Paz at the bottom of the canyon is due to the placer mines which were worked with great profit during the early occupation of the Spaniards. The gold in the river in the immediate neighborhood of the city was exhausted years ago, but the washings are still carried on in the surrounding mountains. Within a league of La Paz only a few years ago a nugget worth \$5,000 was picked up in the bed of the stream, and is owned by Señor Matta, who was then the minister of Chile. In the seventeenth century an Indian who was working in the stream in the very center of the city found a nugget that sold for \$11,269. Occasionally in these days small chunks of metal are still picked up.

But the city of La Paz has long since ceased to be a mining town, and is now the political and commercial center of

Bolivia. A narrow roadway, carved in the side of the precipice, leads from the plateau to the bottom of the canyon, and our driver, after looking his wagon carefully over to see that everything was tight, whipped up his mules and started down the serpentine path with a speed that made the passengers feel very uneasy, and created a sensation among the people that live along the roadway, who ran out of their houses to witness the spectacle. This gratified the pride of Jehu, who cracked his whip and yelled at his mules with a becoming sense of his importance. Although you could almost drop a stone from the rim of the canyon upon the roofs of the houses 1,100 feet below, the roadway is three miles long.

There ought to be a railway between La Paz and Lake Titicaca. Several surveys have been made, and the only reason the track has not been laid is the poverty and insecurity of the government. Every time a new president comes into power the scheme is revived, and just now, since the conservative party was overthrown and the liberals have come into power, an English engineer—Mr. Satchell—has made his appearance in La Paz for the purpose of revising the surveys and renewing the efforts to carry out the enterprise.

XIX

THE CITY OF LA PAZ

Rome, you know, sat upon seven hills, and if that is an advantage La Paz is far and away more notable than the Eternal city, for it covers forty hills and hollows. It is difficult to count them. Two or three of the main streets, which lie along the ridges, are reasonably level and wide enough to accommodate the traffic and the trade of an active population numbering 60,000 or 70,000—there has never been a reliable census. They are lined with fine houses, built of heavy walls of stone or adobe, and painted in gaudy colors—blue, green, purple, and orange—and often embellished with designs in other tints that are very much admired by the Bolivians, who love gay colors and music and motion. But most of the streets are as narrow and as steep as stairways. They are without sidewalks, except the plaza and the principal trading streets, and the pavements are made of small cobblestones, with the sharp ends up, so as to lessen the danger of slipping in damp weather. While this precaution is entirely necessary to the welfare of men and women, as well as beasts, it has its disadvantages so far as the comfort of tender feet and the wear of sole leather are concerned. To a person afflicted with corns La Paz is a purgatory, and one can wear out a pair of shoes there quicker than in any other place I know.

There are only two carriages in town. One belongs to the archbishop, and his eminence is hauled about by three horses because his ecclesiastical pediments are afflicted with the gout. The other carriage is the property of the government, and is one of the perquisites that pertains to the presidential power. It is an ordinary landau imported from Paris in pieces and put together by local talent, and a native artist has painted upon the panels of the doors a brilliant reproduction

of the coat of arms of the republic about a foot square in the national colors—green, yellow and red. This is greatly admired by the populace, who see the carriage only occasionally—on state occasions, when it is drawn by four big black horses wearing harness heavily mounted with silver and decorated with rosettes, tassels and streamers of the national colors.

Everybody else goes on horseback, and the equestrian art has reached a high degree of cultivation among both men and women. The horses are trained to comfortable gaits, and the trappings of a cabellero usually indicate his wealth or social position. The bridle and reins are braided in a most ingenious manner of strips of white kid. The saddle is an example of embossed and stamped leather superior to anything we ever see in the States, although you often find equal and even superior workmanship in Mexico, where the art was inherited from the leather workers of Cordova, in Spain. The stirrups attached to the saddle of a Bolivian cabellero may be carved wood or brass, in the shape of slippers, or even silver ornamented with beautiful designs in repoussé. His spurs are enormous wheels of silver, often three inches in diameter. The saddle blanket is a handsome piece of alpaca hide, with long fleeces of wool carefully combed out and curled. The rider always wears a poncho, that convenient and comfortable garment which serves as an overcoat and an umbrella, a duster, a mackintosh, a blanket, and, like charity, covers any defects in the wearer's wardrobe.

There are several low ox carts in La Paz engaged in hauling heavy merchandise, but they stick to the level streets which lie along the ridges or work up the steep inclines as best they can. Most of the transportation is done on the backs of burros and llamas, and you can see droves of them from every street corner.

There is only one street-car line in the city, and that does not carry passengers, but was laid out twenty-five or thirty years ago for the purpose of bringing stone from a quarry up the canyon to the cathedral that for half a century has been in course of construction in the plaza. The low flatcars laden with stone are hauled by mules and attended by squads of

Indians. When they reach an up-grade the peons take hold and push, and when they reach a down-grade they hop on and ride.

The cathedral, which adjoins the government "palace," where the president resides and the heads of the executive departments have their offices, is an enormous structure, big enough for a town ten times the size of La Paz, and it will be very imposing if it is ever finished. The walls, which are eight or ten feet thick, are veneered with handsomely dressed stone, and some of the carving is artistic. But, although work has been in progress for fifty years, they are not more than thirty feet high, and at the present rate it will require several centuries for completion. Besides the money collected by the clergy throughout the republic, the government has contributed \$50,000 a year to the construction fund on the theory that the cathedral is a state institution, but there is some doubt whether the liberal party, which has recently come into power through a revolution, will continue the subsidy. One of the principal planks in the liberal platform is the separation of church and state, and forbids the interference of the clergy in politics.

There are no notable buildings in La Paz. Churches are numerous but commonplace. There are several big monasteries and convents that cover blocks of ground. The Carmelite nuns, numbering several hundred, are living in a seclusion that has never been violated, although the revolutionary outbreaks that have been frequent do not usually respect church property. This particular nunnery is said to be the largest and the most rigid in its restrictions of any in America, or perhaps in the world. The inmates are chiefly from the upper classes of Bolivia, and those who pass its portals never emerge again until their lifeless dust is conveyed by night to a forlorn little cemetery, shaded by rows of eucalyptus trees, that lies upon a neighboring hillside. Nor do they ever see or communicate with the world outside their walls. Their immolation is complete. They spend their lives praying for the sins of the world, and in holy contemplation. They are engaged in no occupations; their cooking is done by lay sisters who make

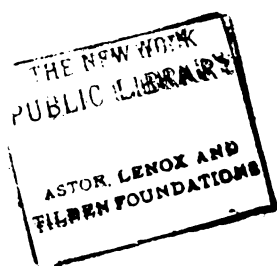
their garments also and perform whatever service is needed within or without the convent walls. It is said that absolute silence is enjoined upon all the inmates. They cannot sing or speak or even pray aloud from one year's end to another, and with the exception of an hour which they pass in physical exercise every afternoon pacing the pavements of the patios with downcast eyes and folded hands, their entire time is spent in prayer before the altar of the chapel or in the seclusion of their cells. It is considered a social distinction in Bolivia for a family to have contributed one of its daughters to this order.

This nunnery and the Franciscan monastery, which is nearly as large, were formerly very rich in mines and haciendas, but they have lost a large amount of their property and complain of being poor. Some of the most profitable mines in the Andes belong to the Franciscans and the Jesuits, and were worked by Indian slaves for centuries, but the introduction of modern machinery into other mines and the depreciation of the price of silver has caused them to be abandoned. La Paz has suffered severely from the same cause. It used to be an enormously rich city, and, isolated there in the mountains, inaccessible to the rest of the world except by a journey of thirty-five or forty days on horseback, before the railroad was built, among themselves the people enjoyed a peculiar pride and distinction in their own achievements, which have been dissipated since poverty and modern ideas and foreign fashions have been brought in among them. It is now only five days' journey by stage and boat and railway train to a seaport where one may take a steamer to the United States or Europe, and it used to be forty. That certainly is progress. Not many years ago you could buy nothing in Bolivia that was not manufactured by hand within its own boundaries. Now the show windows of the principal streets are filled with the latest fashions and flummery from Paris and Berlin, New York and London, and those who can pay the price may wear a French bonnet to the bull fight.

Piled up in the show windows are packages of English soap, French perfumery, Chicago tinned meats, Oregon salmon, New England codfish, kodaks, fountain pens and an infinite



A Power in the Land.



variety of other novelties from all corners of the world, but most of the substantial goods are made in Germany. The Germans very nearly monopolize the retail business there, as in other parts of South America, and of course buy their goods at home.

Other cities in Bolivia are not so far advanced as La Paz. Most of them are 100 years behind the times, and still adhere to the antiquated manners and methods which their ancestors brought from Spain. There is certainly no part of America—I think it is safe to say that there is no spot in the civilized universe—that is so far behind the age or where primitive modes of life prevail as they do in Bolivia.

The many fine houses in La Paz testify to the former wealth of its inhabitants. They are built upon the Spanish plan, and are grand, gloomy and peculiar. The large drawing rooms are filled with antiquated furniture of most elaborate patterns, the walls are decorated with ancestral portraits and ancient paintings, many of them of great value, and massive mirrors which make you wonder how they could possibly have been brought over the mountains. There is a passion for mirrors among all of the Spanish-American peoples, and in some houses can be found pier glasses held in massive Florentine frames that are worth more than all the rest of the furniture under the roof combined. These are particularly expensive in the Andean country, where until recently, as I have told you, everything had to be carried across the desert and over the Cordilleras on the back of mules or llamas, but they were bought in the bonanza days of Bolivia, when the mines were pouring out streams of silver and people could afford to be extravagant. I have seen in a single drawing room in La Paz as much plate glass as can be found in the whole of a luxurious mansion in New York.

It is a mystery, too, how they got so many pianos up there. The people are passionately fond of music, and every man and woman among the white class is a performer upon the piano or some other instrument. There are several gifted composers in Bolivia, and the native music is attractive because of its peculiar time and quaint melody; but it is a never-

ending wonder how pianos that were manufactured in France and Germany are found in nearly every house and could have been brought across the weary trails and over the slippery passes of the mountains by pack animals.

The inclines in the streets of La Paz are so sharp that some of the houses have one story in front and three stories in the rear. There is a good hotel, the best I have found in South America, and it occupies the old palace of the governor of Spain, which according to an inscription over the portico was erected in 1775. It is a pretentious structure, of carved stone, and its massive walls were intended to outlive centuries. The spacious and lofty audience chamber in which the governor received official delegations and entertained his constituents in the name of the king is now a bar and billiard room, where a considerable portion of the male population appear to pass their evenings drinking beer and smoking cigarettes.

The Plaza, which is overlooked by the windows of the hotel, is a pretty place, with a fountain from which many of the poorer families draw their daily supply of water, and has a number of well-kept shrubs and plants. Every alternate evening at 8 o'clock a military band plays in this park, and the entire population turn out to enjoy the music and promenade. It is almost their only social diversion, as opera and theatrical companies very seldom take the trouble to come so far as La Paz, and the exchange of hospitality is limited chiefly to the men folks. On each alternate night the band plays in the Alameda, a handsome promenade, shaded by eucalyptus trees and furnished with rows of iron benches. This is the most popular resort in town, and Sunday afternoon, when there is no bull fight or horse race, everybody comes out in his best garments to see and be seen and gossip with his neighbors.

The Bolivians are a dressy people and take much account of their apparel. It is necessary that every gentleman should have a silk hat and a long frock coat, which he wears on all occasions of ceremony, and particularly when he promenades in the plaza or the Alameda. When he goes to a wedding or a funeral or an indoor function of any sort whatever by night or day he wears a swallowtail coat, a low-cut waistcoat, an

embroidered shirt front, and a large white tie. His boots are of patent leather, and often pinch his feet, if one may judge by the gingerly way in which he picks out the smooth places in the pavement.

When a young man falls in love he does not call at the home of his innamorata, but writes her a letter, or indites a poem to her eyebrow, or buys a bunch of flowers in an elaborate cornucopia of lace paper, or all three, and sends them through one of the servants of the family. And when he meets her in the Plaza or the Almeda, clinging to her father's arm, or under the vigilant chaperonage of her mother, he casts lingering glances of adoration into her coal-black eyes. In his letter he tells her that he will promenade the pavement opposite her father's house at 3 o'clock on the next afternoon, and if she shows her approval of his attentions by presenting herself at the window he confides his love to his father or some sympathetic relative, who conveys a formal proposal of marriage to her parents. If it is accepted and the stipulations are satisfactory, he is allowed to call upon her, but her mother or some duenna is always present during his visits, and the arrangements for the wedding follow as rapidly as possible.

When a gentleman desires to pay a social call upon a family of his acquaintance he must first ask for the gentleman of the house, and if he is not at home the visitor must leave cards and retire. If the host is in the visitor asks permission to see the ladies, which is readily granted, but it would be the height of impropriety to ask for them unless the husband or father is at home. It is not proper even for a doctor to see a lady patient except in the presence of her husband or father or brother.

The climate of La Paz is very trying to strangers who are not accustomed to live among the clouds, and particularly to fat people and cats. Concerning cats I speak from hearsay only. I have had no opportunity for personal investigation, but have been informed by a person of good reputation and respectable connections that there are no cats in Bolivia. When I repeated this novel fact to another gentleman of similar social standing he declared that it was a three-story

falsification; that the country was full of cats; that they stuck their heads out of every doorway and sung to the moon every night from the top of every barnyard fence; but when I brought the two eminent authorities together, and they had argued the question until both were very red in the face and had lost their tempers entirely, the man who asserted that Bolivia was full of cats was reluctantly compelled to admit that he had never seen one within its territorial limits, although he stuck to it stubbornly that there were millions of them in the mountains of Peru. The party of the first part, taking advantage of the concession, then declared that cats could not live at an elevation of 12,000 feet; that the experiment had been tried many times and that the animals invariably died from convulsions when taken to a higher altitude. I leave the question open to discussion by whom it may concern, but can bear testimony that I saw no cats in Bolivia, although they may be as numerous and as active as more minute members of animate creation which make themselves felt, if they are not seen or heard.

At the elevation, 12,250 feet above the sea, the atmosphere of La Paz is so rare that breathing is difficult, and persons afflicted with heart disease or weak lungs or a superabundance of flesh must avoid exertion as much as possible. The veins in your head feel as if they were about to burst; you pant like a tired hound as you climb the steep streets of the city or the stairway of the hotel, and are compelled to stop every few moments to rest and recover your breath. There are sharp pains in the lungs, a drowsiness about the head and eyes, and when you lie down to sleep at night your heart will thump against your ribs like a pile-driver. Unless you are careful you will bring on *sirroche*, or *puna*, or *veta*, as the same disease is known in different parts of the Andes. The Bolivian name, "*mareo Montana*," is as bad as an Irish bull, for, literally translated, it means mountain seasickness. Another disease that is due to the altitude is *sirumpe*, a violent inflammation of the nerves of the eye caused by the winds, the bright rays of the sun and the rarefied atmosphere. The pain is intense and is often attended by delirium.

But none of these things is so troublesome as the cold. The temperature goes as high as 80 and 82 degrees at noonday and falls to 19 and 20 degrees at night in winter, and during the summer months the extremes are almost the same. The lowest record for the year 1899 was 19 degrees above zero. The maximum was 84. The temperature often varies fifty and sixty degrees in twenty-four hours out of doors. The extremes are less inside the walls of the houses, which are so thick that the heat can never penetrate them. It always seems colder indoors than out, and as there is no means of warming the houses by stoves or furnaces they are very uncomfortable. Of course you can go out and sit in the park where the sun's rays may strike you, or you can drink hot tea and other beverages which are supposed to increase the temperature of the blood and serve the purpose of a fur-lined overcoat, but the relief is only temporary. The natives pile on ponchos as they put on kimonos in Japan and stick their benumbed feet into muffs made of wool or fur. The evenings are particularly disagreeable in this respect. We lighted all the lamps we could get, regardless of the extravagance, for the hotel keeper charged sixty cents a night extra for each of those luxuries, and 25 cents for candles; we put on our overcoats and hats, wrapped our legs up in fur robes and huddled around a center table trying to be amiable and happy, but it was no use. The only warm place was in bed between the blankets. When we were invited out to dinner and had to put on our evening suits, and the ladies their low-necked and short-sleeved dresses, we felt as if we might perish from the cold before the ordeal was over, but those who are accustomed to the climate live along without appearing to notice it.

There is only one stove in La Paz, and that warms the reception room of the American legation. Dr. Bridgeman, our minister, brought it from New Jersey, and had a ton of coal shipped up there from the railway headquarters at Arequipa. There is no other fuel in the city except llama dung, which is picked up by the Indians on the trails, dried, brought to town in bags, and sold at the rate of about \$2 a bushel. The natives regard Dr. Bridgeman's stove with awe

and apprehension, as if it were an infernal machine. They think that artificial heat is unhealthy and poisons the air. Gas stoves are useless, for there is no gas. The streets are lighted with electricity, which has been recently introduced into many of the shops and houses.

As one might expect, pulmonary complaints are quite prevalent and pneumonia is almost always fatal. Strangers are cautioned against exposure to the night air and the noon-day sun, whose fierce rays are more keenly felt through the rarefied atmosphere and are apt to bring on *siempe* or mountain fever. We are not far from the equator. La Paz lies upon the sixteenth parallel of latitude, which is about the same as Jamaica, and the elevation and the unusual clearness of the atmosphere cause the rays of the sun to be felt more than in an atmosphere that contains moisture and at the level of the sea. For the same reasons the cold is less severe. The same temperature could not be endured in a moist climate without fires, and, curiously enough, although the mercury may run down to 20 degrees and water freeze in the streets, plants are rarely frost-bitten.

The people, young and old, are terribly afraid of the moon. They doubtless have caught the superstition from the Indians, and dread exposure to its rays more than a pestilence. If the moonlight falls upon a sleeping person he is sure to become insane; if a "mild beam" strikes a baby it will die of convulsions before the month is gone; if you expose your face to the moon you will have neuralgia or the toothache; if you go bareheaded in the moonlight all your hair will fall out, and various other misfortunes befall those who are so imprudent as to expose themselves to the evil influence of that luminary. A Bolivian lover would sooner surrender a year's income than take a moonlight ramble with his sweetheart. It would be equal to suicide. Instead of waiting for a full moon to make a journey, as we often do, the Bolivians will stay at home until the last quarter. Mrs. Bandelier, who is herself an accomplished ethnologist, and knows the ways and the superstitions of the aborigines even better than her husband, explained that all their plans and arrangements are regulated

or affected in some manner by the position of the moon, and she believes that there must be some foundation for a superstition that is so fixed and general.

The Indians of Bolivia drink enormous quantities of raw alcohol, which can produce intoxication quicker than any other kind of liquor. They also drink a great deal of chicha, the native beverage, which is made of corn. The upper classes drink beer and keep three breweries busy.

There are several newspapers in Bolivia, but they are purely political and literary. Neither of them receives telegraphic dispatches, but all reprint news from *El Comercio* of Lima and the Valparaiso papers.

The policemen wear scarlet overcoats with hoods which they pull over their heads at night until they look like Mephistopheles in the opera. They do not patrol the streets, but stand at the corners, and every fifteen minutes at night blow a melancholy strain upon a whistle to show that they are awake. Then they change places with each other. In the old-fashioned towns of the interior it is still customary for the police to call out the hours at night and their voices have such a melancholy tone that they sound like the cry of a lost soul.

"Sereno-o-o-o-o, Sereno-o-o-o-o; Las diez y media y Sereno-o-o-o-o." (All's well; all's well; it is ten and a half and all is well.)

There is very little disorder in La Paz, although there is an unusual amount of drunkenness among the Indians. There are forty-nine religious and five political holidays each year, besides Sundays, when all business is suspended and all shops are closed. On the day following these feasts, and usually upon all Mondays, it is practically impossible to get any work done because the entire laboring population is resting up after its holiday.

The effect of the frequent revolutions is to produce a large crop of young officers who wear brilliant uniforms and look very well in them. The trousers are scarlet, with blue stripes along the seams, and the jackets are of dark blue cloth, embroidered with an excessive amount of gold braid. A lieutenant in the Bolivian army wears as much gold braid

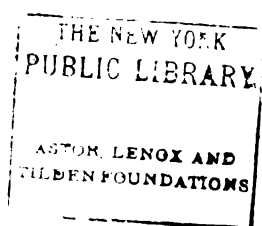
upon his jacket and cap as all the major-generals in the United States combined. They are fine-looking fellows, these young officers, although they have no military education and very little experience. An appointment in the army is the ambition of every young man of good family, although the pay is insignificant and they have to be supported by their parents. The recent revolution aroused a military spirit that will take a long time to subside.

The privates are almost exclusively Indians or half-breeds, short, stocky fellows, beardless and broad shouldered, with great powers of endurance and a courage and stoicism similar to that of the North American Indian. They belong to the Aymara race, and their ancestors formed a part of the Inca empire, having been subjugated by the Peruvians 200 or 300 years before the Spanish invasion. They are frugal in their habits and of patient disposition. Their food consists chiefly of beans, dried peas, parched corn, dried potatoes and coca, which they chew constantly. The coca habit among the Bolivians is as general as the opium habit with the Chinese or smoking among the Irish. It is very seldom that the soldiers can read or write and they live without any ambition or idea of advancement. Whenever they get an opportunity they give themselves up to intoxication, but in the barracks are sober, docile and industrious. They fight on either side with equal energy, they have no idea of principle, but follow their officers with blind obedience for a nominal pay of \$3 a month in silver or about \$1.50 in our money. The soldiers are recruited in the country districts or impressed into the service by local officials, who are called upon each year to furnish their quota for the national guard, although conscription is nominally prohibited by the constitution.

One Sunday we witnessed a military mass. There are no chaplains attached to the Bolivian army, but whenever it is possible on Sunday morning the soldiers are marched to church. On Saturday afternoon they are marched in the same manner to the bank of the river, where they take a bath and each man washes his other shirt, his socks, his towel and his handkerchief if he has one, in the cold water. This ceremony



Bolivian Soldiers.



is performed with the same demonstration and discipline that attends the religious service. The regiment is led by its band through the principal streets of the city and carries its banners and flags. In fact, the troops seem to be always marching. At almost every hour of the day you can hear strains of martial music from one direction or another.

The military mass was celebrated at the church of the Dominican friars. It is a fashionable place of worship, and one of the largest in the city. Behind the altar rail sat a group of gentlemen, including the members of the junta who composed the provisional government of the republic until a new president could be elected in October; the commander of the garrison of La Paz, with his staff, and the mayor of the city, and at either side of the altar stood a stalwart soldier supporting the colors of the regiment. Immediately in front of the rail were the colonel and other line officers, and behind them were massed, between the two rows of big pillars, the members of the entire regiment, about 800 men, standing twelve abreast and leaning upon their muskets.

On either side, near the altar, were groups of kneeling women from the fashionable families of La Paz, with their faces and figures partially concealed by mantas. The brilliant uniforms of the officers, the golden embroidery on their sleeves and breasts, and the aiguillettes that hung from their collars and buttons, their erect attitude and soldierly bearing combined to afford an unusual and an impressive sight.

Both officers and men stood like statues through the entire service, with their eyes upon the officiating priest. At the elevation of the host a hoarse order to present arms disturbed the solemn silence, and as the priest lifted the chalice that contained the emblems the sergeants that stood each side of the altar dipped their colors, every officer drew his sword and stood in the attitude of salute and the musket barrel of every soldier was held parallel to his nose. The next instant the regimental trumpeters sounded the salute of honor, the drum corps beat the long roll, and the napkin was replaced upon the chalice and the doors of the tabernacle were closed.

The federal building, in which the president resides and

where his ministers have their offices, is a modern structure of well-carved stone, three stories in height, and fronts the principal plaza of La Paz. It surrounds a large courtyard or patio with wide galleries, and the apartments to which the public are admitted are high and spacious. The president's room is furnished with a fine lot of carved furniture and gilt mirrors.

The congress sits in an old Jesuit monastery, which occupies another side of the plaza. The chamber of deputies has the chapel and the senate what was once the library of the monks.

There is an interesting market in La Paz. It is open daily for trading in all sorts of merchandise of domestic manufacture, but on Sundays and Wednesdays the Indians come in from all the surrounding country, bringing their handiwork as well as the products of their farms and gardens, and make an attractive display of ponchos, blankets and other homespun fabrics, native jewelry, toys and trinkets of every sort. The Indian women are very ingenious and industrious, and have remarkable taste in the arrangement of colors and devising of designs. They love gay colors and embroideries and wear quantities of other adornments. They have a distinctive costume of home manufacture which the dealers in imported goods fortunately have not been able to disturb. They usually wear a little panama hat, braided of soft white fiber, with a black band around it, similar to those worn by men, with the exception of a narrow rim, and it is perched jauntily upon their abundant black hair, which hangs in two long braids down their backs.

Their dresses resemble those worn by the peasants in the Tyrol. The skirts are of gay colors, made very full and smocked from the waist down a distance of six inches, and above the deep hem are three broad tucks. The material, which comes from the native looms, resembles canton flannel with the fleecy side out, and velveteen of brilliant hues is popular, with braid in rows of a different color. The skirt is very short, hanging above the shoetops and revealing gay hosiery and native shoes of bright-colored leather, with long laces and

high French heels. Sometimes the shoes are white, sometimes yellow, red or purple—the brighter the better, and any color except black. Under the skirt are an indefinite number of white petticoats, elaborately embroidered and edged with lace. The waists are made of bright-colored calico, velveteen and other fabrics, and around their shoulders they wear light shawls or scarfs called rebosas.

Brass or silver chains, bracelets of hammered silver, copper, tortoise shell and other materials encircle the wrists, and one or more rings ornament every finger. Their earrings are large and long, usually of silver gilt set with cheap stones, imitation emeralds, garnets and artificial pearls.

The older women affect colors that are quite as gay and usually have a baby swung over their backs in a shawl.

The girls are not pretty, but many are attractive. They have bright eyes, even white teeth and a good-natured expression. Their complexions are clear but dark—copper-colored, like the squaw of the American Indians.

The shawl is usually fastened by a long brass stickpin, and sometimes several of them, with the bowl of a spoon for the head, thereby combining ornament and utility. Other forms of stickpins, like skewers, are also used. The women of the interior tribes deface their teeth by filing them into sharp points and setting little gems into the surface, as the women of some of the oriental countries do.

The men always go barefooted and barelegged, and wear short wide trousers of some dark woollen cloth that are slit up the back as far as the knee, so as to give their legs freer action in climbing the mountain trails. Under these trousers they have white cotton drawers, which always seem to be clean and well laundered. Upon their heads they wear a close-fitting cap or hood of knitted work or some dark woollen cloth that fits closely down over the ears and neck like the hoods children wear in cold weather in New England. Upon this they wear any kind of a hat they prefer, of straw or felt or any other material, while their shoulders and bodies are protected by the inevitable poncho, which is their coat by day and their blanket by night, a comprehensive as well as a comfortable garment.

The poncho dates back to prehistoric times, and the ruler of the Inca empire, when he sat upon his throne, wore one woven of the silver hair of the vicuna. The ponchos you see in Peru are of somber colors. Those worn in Bolivia are like Joseph's coat, of many colors, and the most brilliant that can be procured.

In dealing at the market a customer is not expected to pay the first price asked. If he does the seller will be much disappointed, because she will lose the opportunity of showing her shrewdness in making a bargain.

At the market place and at the postoffice, as on the quays of Constantinople and Alexandria, are professional scribes, with a package of stationery and an ink bottle, who for a small fee will undertake the correspondence of those who lack literary gifts or whose education has been neglected.

A curious commodity that enters into nearly all preparations of food always attracts the curiosity of travelers who visit the Bolivian markets. It is preserved potatoes, cut into cubes or slices and exposed to the air until the moisture is entirely evaporated. The chips have a dry, corky appearance, and are almost tasteless. They are always used in the preparation of "chupe," the national dish, which is usually the first course at both breakfast and dinner.

Salt is sold in cubes about the size of building bricks used in the United States, being pressed into shape when damp and allowed to harden.

The Indians of the interior wear shirts and hats made of the bark of a tree, which is soaked in water to soften the fiber and then beaten to make it pliable.

In the markets and at the shops in this country it is the habit of customers to demand what they call a "yappa"—a present, a little something "to boot." If you buy a parcel of vegetables from a market woman she must throw in a potato, an onion or an orange, or if you buy a dress at a dry-goods store you expect a piece of ribbon or a paper of pins. The buyer is not allowed to make the selection; the seller reserves that privilege.

The ancient bridges found in Bolivia are exceedingly sim-

ple in construction, but are well adapted for crossing the rapid streams that rush down from the Andes and defy the skill of the modern engineer. They consist of strong cables of the cabuya, a native vine, or of a twisted rawhide stretched from one bank to the other, something after the style of the suspension bridges of our times. Poles were lashed transversely, covered with palm leaves, reeds, split bamboo branches, and these were again covered with earth and stones so as to form a solid floor. Other cables extended along the sides, which were interwoven with similar material or the limbs of trees, forming a kind of wicker balustrade. In some cases the mode of transit was a basket or car suspended on a single cable and drawn from side to side with ropes. One would think that bridges of this description would not be very enduring, yet those exist which are said to have been constructed by the Incas more than 400 years ago.

"I hope you will go to the bullfight this afternoon," said a young woman with a pleasant face as I passed her on the gallery of the hotel at La Paz, "because I'm an American from New York, and my husband is the chief matador. He is a Spaniard, and we have been fighting like everything ever since the war with Spain began, for I had to stick up for my country, and he had to stick up for his, and wasn't it great that we whipped? I don't know what I should have done if the Spaniards had won at Santiago! My husband was certain they would, and I was terribly nervous; but didn't Sampson and Dewey give it to them, though? I teased my husband about it so much that he was mad for a week, and then the newspapers down here were all on the side of Spain, every one of them, and he'd read me pieces every morning telling what cowards the Yankees were, and how easily the Spaniards were going to do them up, but I told him to just wait and see. I was awfully scared all the same. I didn't know what might happen, and almost everybody was against me, but I kept my mouth shut, and then when we whipped them I had the talk all to myself. My husband and his Spanish friends were so disgusted and astonished that they couldn't say a word. They didn't dream it would be so easy, nor did I, either, but I rubbed

it into them good, I can tell you; and you will come to the bullfight, won't you, if it's only because I'm an American? My husband will be proud to have you, and the papers say he's the best matador in South America. There isn't another that can touch him, for he's had the best training a man can get in Spain, and he's awfully handsome. You must have noticed him about the hotel," and so the bullfighter's wife prattled on in a pleasant way about her novel experience and her admiration for the man who had made a romance of her life.

She was a New York girl, and had married him in Lima against the wishes of her family; and contrary to their gloomy predictions he had turned out to be the most devoted of husbands and she had been "awfully happy" with him.

I met the paragon a few moments afterward, and in most elaborate phrases he expressed the honor he would feel if we would attend the bullfight. He looked like Louis James used to look when he was younger—a frank, open-faced fellow, with a pleasant smile and a pair of innocent brown eyes that seemed incapable of cruelty. He said that he already had ordered a box reserved for our party, and would kill the third bull before it in our honor.

Bullfighting in Bolivia, as in Spain, is the national amusement, and calls out about the same degree of enthusiasm as a football game in the States. The authorities of the municipality preside over the function, and the mayor of the city sits in the most conspicuous box with a trumpeter by his side to direct the performance. They do not permit horses to be gored, as in Spain and Mexico, and when the cruel amusement has continued long enough the trumpet sounds and the matador is obliged to dispatch the panting animal with as much mercy and skill as possible.

The bull ring occupies the summit of one of the many hills that are covered by the city of La Paz, and overlooks a large area of picturesque roofs of red tile. It is a circle of adobe wall about 200 feet in diameter, inclosed with terraced benches that are sheltered by a roof of galvanized iron. The woodwork is roughly made, but it answers the purpose. Over the main

entrance is the mayor's box, ornamented by the national colors, and beside it was stationed a military band which entertained the audience during the intervals between the forays. The audience was not large, and was mostly assembled on the shady side of the amphitheater. The sunny seats, which are sold at half price, although they are more comfortable than the others, were occupied by soldiers, street gamins, and peons, who wore bright-colored ponchos. Among the better class of the audience were many children, and even babies—the same kind of people that one sees at a circus at home.

His honor, the alcalde Señor Zuazo, was late, and when he entered his box the audience manifested satisfaction by clapping their hands, while the urchins on the other side shouted, "Fine him," and made other disrespectful remarks. As this august official took a seat with great dignity the trumpeter at his side sounded a signal. The doors swung open and the troop of performers entered with Francisco Palomar, or "Caro-Chico" (Little Love), as he is familiarly known, at the head. He had six companions, picadores and banderilleros, clad in gorgeous costumes elaborately embroidered in silver and gold. They wore cocked hats, and wigs and cues that hung down between their shoulders, silk stockings of different colors and slippers with big silver buckles, such as you see in pictures. The band played a triumphal march as the party posed in the center of the ring and bowed in acknowledgment of the plaudits. According to the posters it was a "Gran competencia de los valientes Matadores Caro-Chico y Cuqui. Se lidaran 6 hermosos y bravos toros escogidos y probados escrupulosamente para esta corrida," which in short means that Caro-Chico would compete with Cuqui and the great company of matadors would fight six brave and beautiful bulls which had been scrupulously selected for that occasion.

After salutes and salutations had been exchanged between the performers and the audience, Caro-Chico stepped forward and made a low bow to the mayor. The latter acknowledged the salute with impressive dignity, and nodded to the trumpeter, who blew a triumphant blast. The gates opened and a big black bull which was named on the programme as "quita

penas" rushed into the ring. He stopped at the center, stared around in wonder at the surprising spectacle, then turned tail and ran back to the entrance trying to return to the stable. It was evident that he did not intend to fight, and the crowd shouted in derision. The picadores came out to tease him, and the frightened animal dodged them the best he could. When the banderilleros, with handsomely decorated darts in their hands, came forward the bull ran around the ring trying to avoid them and looking anxiously for shelter. The audience roared with ridicule and hissed like a lot of lunatics. They shouted instructions to the alcalde, who good-naturedly accepted their verdict and ordered the trumpeter to sound a recall. The cowardly animal was turned out, and the matadores and picadores crossed their legs and rested.

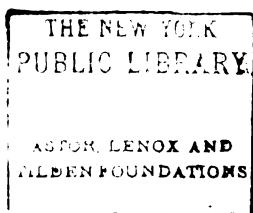
In a few seconds the trumpet sounded again, and in rushed another bull, black and white, much smaller than the other, and with a good deal more temper. He pawed the dust in the center of the ring and looked savage, but the picadores played with him without the slightest fear of danger, flapped their scarlet cloaks under his nose and touched his horns with their hands. An agile fellow faced him for a moment and then plunged a couple of sticks with iron barbs and tissue-paper fringe into his sides. The bull snorted and shook his frame in a frantic way, plunging in one direction and then in another, but could not shake them off. For ten minutes or more his tormentors teased him, until his dripping sides were almost hidden with the cruel darts. Then Caro-Chico appealed to the alcalde for permission to kill him.

Drawing his long sword the matador approached the frantic animal with the weapon concealed under his scarlet cloak. The bull followed him with terrified eyes and made two or three attacks which the matador gracefully evaded. Then, looking the animal squarely in the face, as if to hypnotize him, and muttering something in a low tone, he darted forward and buried his sword in the beast's heart. The blood gushed from the animal's mouth and nostrils, and with a piteous groan he sunk upon his knees and rolled over upon the crimson pool.

The audience screamed with admiration, and many threw



Caro Chico—the Bull Fighter.



their hats at the matador, which is the highest tribute of applause. Caro-Chico picked them up one after another and gravely bowed as he tossed them back to their owners. Meantime a half a dozen peons with a team of mules decorated with Bolivian colors appeared in the ring, and, hitching a rope around the horns of the dead animal, hauled the carcass out of sight and sprinkled sand over the bloody spot where it had fallen.

"The intrepido perdigon," as the next animal was announced upon the programme, had no spunk at all, and ran away from his tormentors until the crowd demanded better sport, and the alcalde ordered the door opened and the animal put out. The fourth was a little red fellow called "calsetero," and he plunged from one side of the ring to the other as if he intended to tear everything to pieces. There was more fight in him and more fury than in either of the others, and it required all of the agility of the banderilleros to keep free of his horns, but, after a time, when he showed signs of fatigue, the second matador, Francisco Espinosa, whose stage name is "Cuqui," came forward at a signal from the alcalde and attempted to dispatch him, but his sword struck the shoulder-bone and only went in half way. The bull snorted and plunged until he shook it out. One of the picadores recovered the weapon from the dust and returned it to Cuqui, who tried a second and even a third time before he killed the animal.

Meantime the audience became furious with contempt and disgust, and raged as a North American audience often does at a baseball game when they don't like a decision of the umpire. They called Cuqui a butcher, and demanded that he should be put out; they threw orange peel and beer bottles at him, and no form of ridicule or contempt was lost in the excitement that followed. The culprit endeavored to preserve his composure and show his indifference, but he was not very successful.

The raid continued until another little black bull called "burraquito" was admitted to the amphitheater and was followed by one of the banderilleros on horseback dressed up like

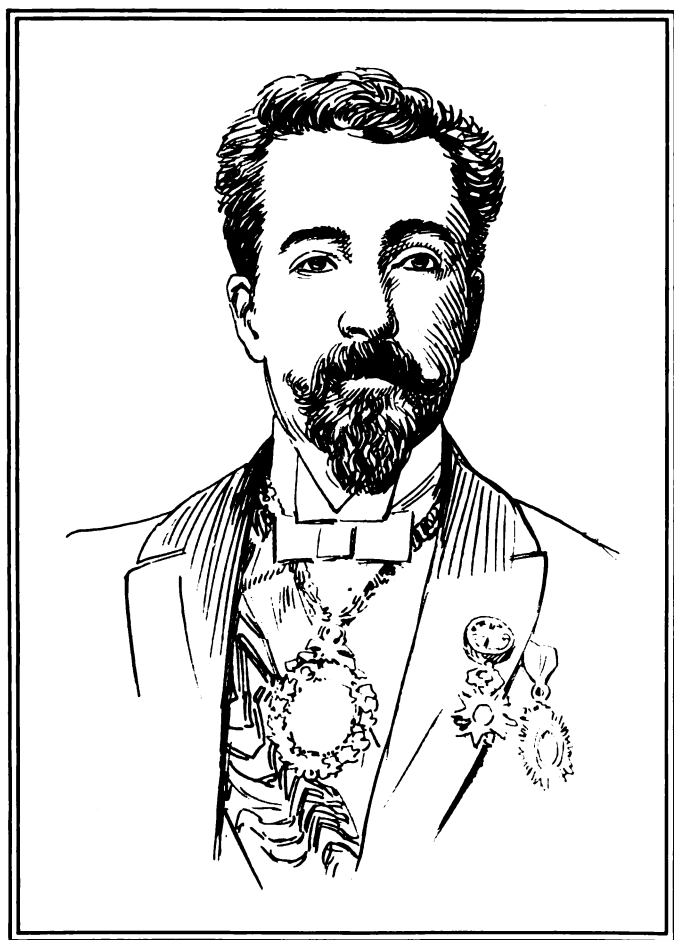
a countryman or what our boys would call a "jay." This bit of comedy was not very successful, for, as was afterward explained, the bull had been raised in the same pasture with a lot of horses and was utterly indifferent to them. The horseman, however, galloped around the ring with darts in his hands and plunged them with great skill into the neck and shoulders of the animal, which pawed the dust and tried to shake them out and kicked at the horse, but would not gore him. The young man ventured too far, however, at one time and was thrown from his saddle, which created a little excitement, but no harm was done, and as the horse was not blindfolded he was able to take care of himself.

Then, at a signal from the *alcalde*, all the other performers retired and left Caro-Chico alone in the amphitheater. He came across to where we were sitting, tossed his hat into our box, made a graceful bow and said in Spanish:

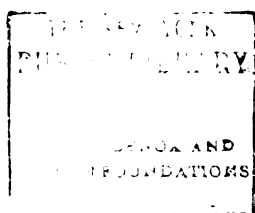
"For the honor of yourself and family."

By this time the animal was frantic with fright and pain, and as Caro-Chico approached him made a terrific plunge. The bullfighter turned his back upon the animal and started to run away, but was not quick enough. One of the sharp horns caught in the seat of his trousers and tore quite a rent. With marvelous agility Caro-Chico turned, placed one hand upon the horn of the animal and vaulted out of danger, but it was a narrow escape, and he left one of his slippers lying on the sand. The bull sniffed at it and pawed it with his hoof, while Caro-Chico removed the other slipper, acknowledged the excited demonstrations of the audience, nodded to us as much as to say, "I am doing my best to entertain you," and then returned to his work. There was some skillful and reckless play. The audience held its breath at the audacity of the performer, who seemed absolutely fearless and to delight in the most dangerous encounters with the infuriated animal. When the trumpet sounded he calmly turned toward the *alcalde* and acknowledged obedience, although the bull's horns were within an inch or two of his side.

He stepped quickly to a box in which his American wife was sitting and received from her hands a long, new sword,



Dr. Alonzo, late President of Bolivia.



which he concealed under the folds of his scarlet cloak as he returned to the center of the ring, where the bull stood panting and pawing the ground. Like a panther Caro-Chico slowly approached his prey with his eyes fastened upon those of the animal. There was a quick flash of the blade and all was over. The bull dropped like a lump of lead. In obedience to custom Caro-Chico came to the front of our box and bowed, and I tossed his hat back to him with an honorarium concealed under the sweatband.

Another bull was brought into the ring and Espinosa made another bad break, to the intense indignation of the audience, who were mad enough to mob him. He drove his sword entirely through the animal, but missed the heart, and the poor creature plunged around the ring, leaving a stream of blood upon the ground, until one of the other performers crept up behind and drove a dagger into its brain.

As the trumpet sounded for the last bull the urchins on the sunny side of the amphitheater tumbled over the railing into the ring and made themselves and the audience merry by teasing the poor animal, which had large rubber knobs upon his horns, so that it could not injure them. Their antics were amusing and the regular performers stood by to interfere in case the youngsters needed assistance, but the bull was neither active nor ugly, and stood entirely upon the defensive. This we found to be the custom of the country. The amateurs, the urchins who are ambitious to be bullfighters, are allowed an opportunity at every performance.

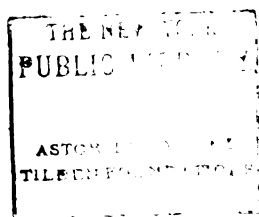
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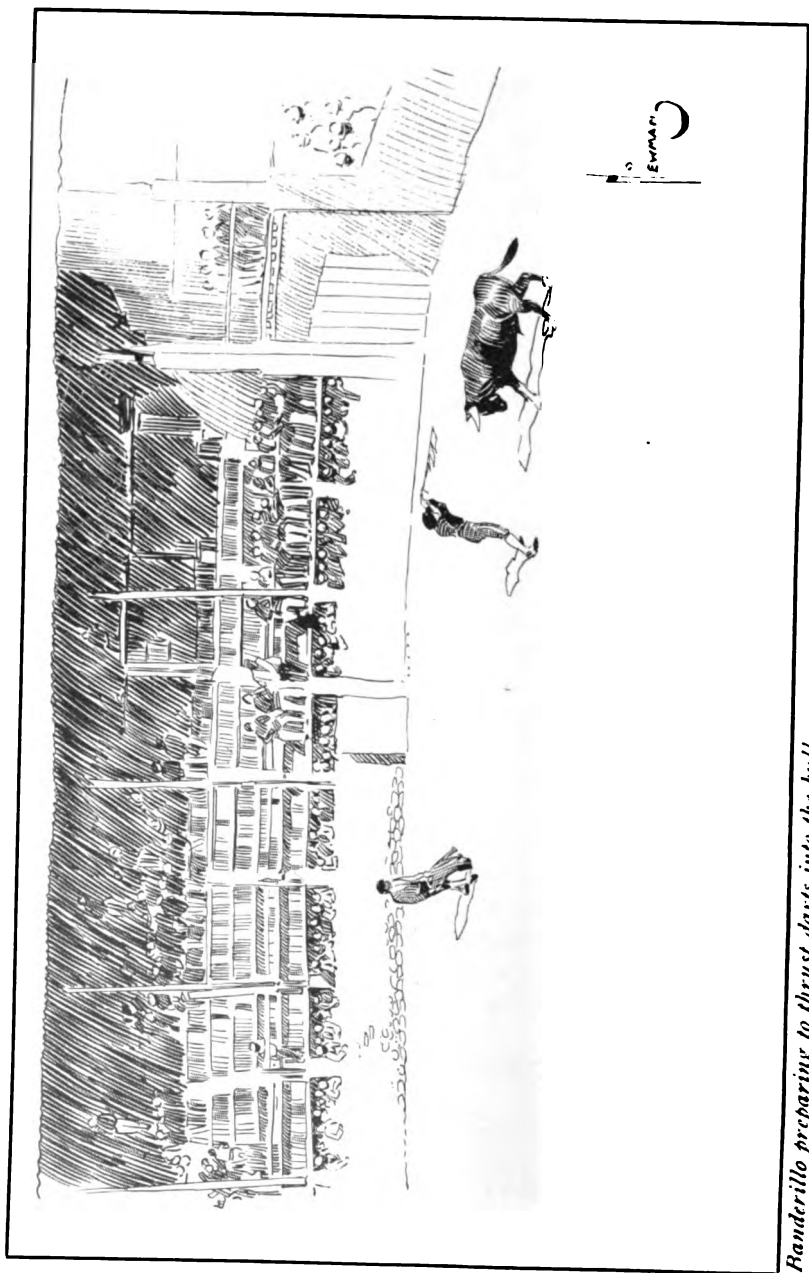
POLITICAL AND SOCIAL CONDITIONS IN BOLIVIA

None of all the list of civilized countries in the geography is so isolated and antiquated as Bolivia. Situated in the center of the continent at an average elevation of 12,000 feet above the sea, with 150 miles of desert and a range of snowclad peaks between its territory and the Pacific, and another range of mountains and an impenetrable forest 1,000 miles deep on the other, with no railways, no telegraphs except a single wire erected by the government for military purposes and seldom capable of service, with a mail that is brought on muleback once a week or less frequently to its principal cities, and a general hostility to progress, to modern sciences and all innovations, what else could you expect?

Some years ago the province of La Paz, which lies at the northern end of the republic and adjoins Peru, was invaded by Yankee enterprise. A railway was built from the seacoast to Lake Titicaca, and a line of steamers placed upon its mysterious waters. Since then La Paz has made gradual progress, and is now the most populous and the most progressive of the nine departments. Indeed, modern ideas prevail in no other part of the country. The remainder of the population still live in the sixteenth century, under the influence of a few families of the old Spanish aristocracy, who have kept their blood uncontaminated and are very rich, very proud and very conservative. They abide at Sucre, Cochabamba, Potosi and other cities of the interior; they own the haciendas and the mines; they hate foreigners, resist innovations and are sufficient unto themselves, contented with their own ignorance and isolation. They hold the Indians in a form of servitude like the feudal system of the middle ages in Europe.

Thus a few families, rich, exclusive and autocratic, have





Banderrillo preparing to thrust darts into the bull.

for many years controlled the government, and have kept the country in subjection and resisted every form of progress. Francisco Argendona, for example, one of the wealthiest men in America, controls the banking privileges of Bolivia. Anacito Arce, his brother-in-law, owns the Huanchaca silver mines, which are said to be the richest in the world, and other families of similar influence and position make up the little faction and have intermarried so frequently that their interests are mutual and they form a single family.

Naturally, this state of affairs could not exist without provoking friction. Ambitious men who are not admitted to the chosen circle, and the progressive element, which has been organized under the name of the liberal party, has kept up a continual protest. But it was useless. The clerical or conservative party had behind it the army, the treasury and the executive power, and what was even more important, the electoral machinery, and controlled the congress and the courts. In Bolivia suffrage is limited to property owners. A man must have an income of \$200 a year before he can vote, and that is a good deal of money in a society so primitive as we find here in the mountains. There is also an educational test, and the school privilege is limited to the aristocracy. The president appoints the judges of the courts, the governors and all the other influential officials of the provinces, the archbishop, the bishops and the other prelates of the church, and the clergy are assigned to parishes under his supervision, and their salaries are paid from the public treasury upon his warrant. Hence there is centralized in him an authority and an influence as great as is exercised by any absolute monarch.

There has been a long fight over the location of the capital, which in the days of Spanish occupation was fixed at Sucre, an old-fashioned town in the far interior, which has made no progress for a century and is now as far behind the times as any town in the interior of China. As a consolation to the progressive element a law was passed some years ago permitting the president and his ministers to reside elsewhere and authorizing him to convoke congress wherever in his judgment was most convenient. Under this provision La Paz has been the

actual, although Sucre is still the legitimate, capital of the republic; but last winter the conservative element, having become dissatisfied with the preference shown to that city, and fearing the effect of modern ideas and foreign immigration upon their exclusive policy, passed a law requiring the president and his cabinet to maintain the seat of government permanently at Sucre, which can be reached only after nine days' ride on muleback from La Paz, and is separated from the ports on the Pacific Ocean by both ranges of the Andes.

When this vote was taken the seventeen members of the chamber of deputies from the department of La Paz retired from congress and returned to their homes, where a public meeting was held and resolutions of protest adopted. They objected to Sucre, because of its location and inaccessibility, and insisted that the seat of government should remain at La Paz, where it had been located almost constantly since railway communication was opened with the outside world. The president, Dr. Alonzo, being a conservative and a member of the little ring of aristocrats that had placed him in power, was living at La Paz, and made preparations to remove the seat of government. He was warned that if he did so he would meet with violent resistance, and very soon a revolution was declared. The department of La Paz, which is the most progressive and the most populous of the entire country, and from which more than a half of the public revenue is derived, was united in the opposition, and received the support of the liberal element throughout the entire country. At the same time the leaders of the revolution adopted the dangerous expedient of arming the Indians, who were in a general state of discontent because of excessive taxation, the laws of peonage, the rule which required them to work on the roads without compensation, and a natural tendency to restlessness. Until then the Indians were prohibited from carrying arms, and the sale of ammunition was a monopoly of the government.

José Manuel Pando, a colonel of engineers, who had been involved in several unsuccessful revolutions attempted by the liberal party in the past, who had spent a considerable part of his life in exile at Panama, Valparaiso and Buenos Ayres, and

Group of Bolivian Natives.



THE NATIONAL
ARCHIVES
COLLECTION
OF
THE
UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT
WASHINGTON, D. C. 20240

whose ideas were very much in advance of the party in power, was selected as leader and placed in command of the army. President Alonzo made a very weak resistance. There was a good deal of marching and plundering and guerrilla warfare by both armies, but only one pitched battle, which was fought in April, 1899, with extraordinary slaughter, and resulted in an overwhelming victory for Pando and the revolutionary forces. Alonzo's soldiers who were not left dead upon the battlefield scattered in squads throughout the country. Many of them were overtaken and massacred by the Indian allies, and the stories told of their barbarities are almost beyond belief.

It will depend largely upon the tact and prudence of Colonel Pando whether liberal ideas are hereafter to prevail in Bolivia. He is placed in a very difficult position, but is said to be a cool-headed, conscientious and broad-minded man. Although without experience in civil administration, he has had an opportunity to observe the conduct of affairs in several foreign countries, and is said to be gifted with a great deal of common sense. He has a mongrel lot of material to deal with in making up his government, and there his greatest difficulty lies, but the autocratic power that is allowed the president of Bolivia will enable him to keep a tight grasp upon all local affairs himself.

Another great danger lies in the restlessness of the Indians. They present a very serious problem. Although the Spaniards have possessed this soil for three centuries and a half and have held them in subjection and servitude, they do not forget that their fathers were once lords of the land and that the earth was moistened with their blood before it was stolen from them. Nor have they abandoned their ancient pagan rites, but still observe them with scrupulous fidelity. They dream of a time when the Spanish intruders shall be expelled, when their ancestral acres shall be restored to them, and when members of their own race shall be elevated to power. One of the favorite occupations of the shamen, or priests, on their festival days, is to proclaim prophecies concerning the restoration of the Inca empire, and they make no secret of their hostility to white men and foreigners generally. They have secret organ-

izations which even catholic priests of their own race are not allowed to penetrate, because the leaders are aware that the latter owe a higher obligation to the church, and the church has always been a part of the government. Their sorcerers and caciques, or native priests, constantly teach sedition, and the attitude of every Indian toward the government is that of insolent hostility, no matter who is in power.

During the recent revolution many unauthorized promises were made to the Indians by local leaders in order to secure their aid for the liberal movement, and most of them it will be impossible for the new administration to fulfill. At the same time the Indians learned several valuable lessons in that brief experience, which will seriously affect their future conduct. In the first place they became aware of their own power, of which previously they had only an imperfect conception. In the second place they have enjoyed immunity from punishment for the horrible outrages and excesses they committed. They have not been punished for murder nor compelled to restore stolen property, which is a most dangerous precedent, and they attribute it to the timidity and impotence of their white rulers. In the third place, they have obtained arms for the first time in their lives, and a rifle is now concealed in nearly every Indian cabin. They have very little ammunition, and it will be difficult for them to obtain more; nor have they any experience with the use of firearms, but they are quick to learn and very shrewd in accomplishing their designs.

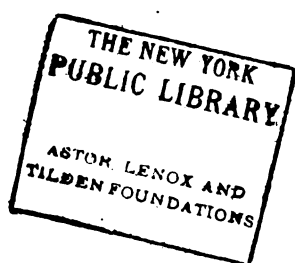
José Manuel Pando resembles General Grant in appearance and manners. He is a stolid, stubborn man, so self-contained, silent and immovable that they call him the sphinx, and when I asked one of the best-posted men in the city what line of policy the new president would probably follow, he replied:

"All of José Manuel's secrets are kept under José Manuel's hat. You won't find them anywhere else. He has no confidants."

Colonel Pando is built of bone and muscle, a short, solid, athletic man, without an ounce of superfluous flesh, accus-



Patio of a Bolivian Residence.



tomed to hardships, fond of frugal living, and a great capacity for physical endurance, for he has spent the major portion of his life since he became a man campaigning in the mountains and exploring the wilderness on the east slope of the Andes. His face is intelligent, but wears a serious, imperturbable expression. He is without sense of humor, his social qualities are not strongly developed and he has never been accustomed to pleasure. His eyes are small and alert, his profile is finely cut and his hair and beard are so closely trimmed that no outline of his head or face is concealed. He wears a snug-fitting undress uniform—a sack coat of blue, closely buttoned, and trousers of the same color and material, with no ornaments except the shoulder straps of a colonel. He looks quite plain and simple in comparison with the brass-mounted aides-de-camp who attend him and the ordinary gold braid and lace of the Bolivian officers. His manners are unostentatious and his reticence offers a striking contrast to the natural effusiveness of his race. He is modest, retiring and taciturn, a constant student, but more familiar with the military than the civil affairs of Europe and North America.

Colonel Pando lives in a modest house on one of the side streets of La Paz, in which he was born. It has belonged to his family for several generations. The outer walls are painted light blue, the interior is old-fashioned and does not differ in appearance or arrangement from a majority of the residences in La Paz. It surrounds a patio paved with kidney stones in simple patterns of black and white.

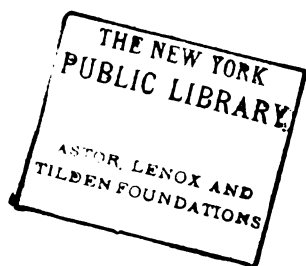
Passing up a narrow stairway we entered a gallery that overhangs the patio and found there a young officer in shining apparel, who took our cards and informed us that his chief was expecting us at that hour. We were ushered into a large apartment with windows looking upon the street which any one would recognize as the living room of a busy family. The old-fashioned furniture, well worn, was decorated with "tidies" of crochet work and embroidery. The tablespread was of some homemade knitted stuff. On the walls were amateur paintings and drawings and enlarged photographs in crayon of members of the family. There were jardinières

filled with artificial flowers and grasses that had been dipped in alum or salts and were covered with sparkling particles. The piano was littered with well-worn music and a guitar leaned against a chair near by on friendly terms with an idle sword which some member of the family had evidently detached from his belt and dropped there when he went in to breakfast, for we could hear the rattling of dishes and the chatter of familiar conversation through the glass doors that led into the next room.

The president of Bolivia is a native of La Paz, of excellent family, untainted with Indian blood. He was educated at the National University, entered the army as an engineer about thirty years ago, and soon after joined a party of explorers under George Earl Church, an eminent engineer, who made a topographical survey of the eastern provinces of Bolivia and followed down the many affluents of the Amazon in search of a navigable channel from Bolivian territory to the Atlantic. He was engaged upon that and similar work for nine years, and wrote a book containing his experiences and observations, which is said to be interesting reading and was published by the government and by a syndicate which has a concession in that region. No one is more familiar with the unsettled area of this country than he and no one appreciates more highly the importance of its development.

Impatient with the government for its conservatism and reactionary policy, Colonel Pando joined the liberal party and participated in several revolutions which were organized as a protest against what they considered fraudulent elections. He has spent most of the time during the last twenty years or so in exile, chiefly at Panama and Buenos Ayres, having a son in business at the latter place. All his family have been sent to England for education, and they speak English and French fluently, as well as Spanish. Colonel Pando himself understands English, which he learned from the engineers with whom he was associated in the Amazon country, but will not trust himself to speak in that language.

One of his sons, a tall, fine-looking boy of 22, had just returned from England, and, like his father, will follow the



profession of an engineer. He is now associated with an Englishman named Satchell, making a survey for an electric railway between La Paz and Los Altos, as they call the plateau that surrounds the city. We saw the young man with his sister, a handsome girl of 18 or 19, at Copocobana during the Indian festivities.

The government house, in which the president resides, or "el palacio de gobierno," as it is called, is quite an imposing structure, with large apartments, high ceilings, many large mirrors with heavy Florentine frames, and old-fashioned mahogany furniture, but it has remained unoccupied so much that it has a musty smell and a dilapidated appearance.

The "scala del congreso," or hall of representatives, is a large room without desks, but with two rows of seats on either side, which are occupied by the members, the government party being on one side and the opposition on the other. At one end is a platform upon which the president sits in a large gilt chair under a canopy of scarlet velvet edged with gold fringe, and he rings a little tea bell instead of using a gavel. At the other end of the room is a "barra," or railing, outside of which the public are admitted without restriction and during interesting debates this space is usually crowded with sympathizers of the different factions, and admirers of the leaders. Two soldiers armed with rifles guard the entrance, and a general of the army is detailed to act as sergeant-at-arms. A new presiding officer is elected every month.

The members of the cabinet are allowed seats on the floor and can participate in the debates, but have no vote. The president of the republic has the similar privilege, but seldom exercises it. He usually appears at the opening of each session of congress, and delivers his message orally, instead of in writing, and on the closing day he makes a farewell address to both houses, which meet in joint session. Whenever he enters the chamber he is accompanied by a color bearer carrying the national ensign, which, by the way, is quite a gorgeous one, being composed of three wide bars of yellow, scarlet and green. He wears a uniform heavily embroidered with gold lace, is girded with a tri-colored sash, and wears three plumes

in a cocked hat which also represents the national colors. He is always attended by a large staff of military men.

The president is ex-officio commander-in-chief of the army with the rank of captain-general. He receives a salary of 18,000 bolivianos, which are worth about 50 cents in gold, and an allowance of \$6,000 for incidental expenses.

There is a property qualification for suffrage in Bolivia. No man can vote unless he has an income of at least 200 bolivianos a year, and he must be able to read and write. Bankrupts and all men who work for wages are debarred from voting, the latter on the theory that their action would be controlled by their employers. To be a member of the house of representatives one must have an income of 400 bolivianos and 800 bolivianos to be a senator. There is an alternate for every senator and representative, who takes the seat, performs the duties and draws the salary of 200 bolivianos a month in absence of the principal. No man can hold office or vote who owes money to the government.

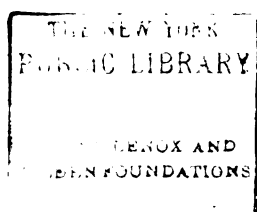
The members of the cabinet are responsible to congress, as in England, and not to the president. They are responsible to the parliament, and not to the crown—in fact, the Bolivian constitution is modeled in this respect to that of France.

The provinces are governed by prefects, who are appointed by the president and are responsible to him. The judges of the federal courts are elected by the congress, and they appoint the judges of the lower courts. The municipalities are governed by alcaldes and councils; the police force is a part of the army and under the control of the president.

The stoves of the Bolivian Indians are curious things. A hole is dug in the ground about eighteen inches deep and a foot square, and over this is built a roof of clay with holes of different sizes to receive the various cooking pots. Roasting is done on spits passed through the holes, so that the meat comes out very much smoked unless great care is taken to have only live coals at the bottom of the oven.

The national dish, and the common food of the masses, is "chupe," a sort of first cousin to the Irish stew. It is a conglomerate, composed of irregular constituents from the animal





and vegetable kingdoms—a mess of mutton and such other meats as are available: chicken, fish, fruits, potatoes, carrots, barley, corn, rice, onions, yams, etc., chopped up, highly seasoned with peppers and herbs, and stewed to a consistency of porridge. What happens to be left from one meal simmers in the pot until the next. If the fire goes out the “chupe” is allowed to cool, but it is warmed up again and a new supply of the ingredients added to the waterlogged and greasy stuff for the next meal. In the cities, at the hotels and restaurants where there are French or Swiss cooks, the “chupe” is savory and palatable, but the farther you go from the centers of civilization the worse it gets. One eats it at first under protest, then from necessity, and only to escape starvation; but finally the stomach rebels and you limit your diet to boiled eggs and fruit, which are usually to be obtained; but the experienced traveler always takes canned meat and bread with him.

Sucre is a very old town, and was founded several centuries before the conquest. It was formerly known as Chuquisaca, but in 1824 it was christened in honor of General Sucre, one of the heroes of the war of independence.

The most imposing edifice, and the most interesting object in Sucre, is the Church of Nuestra Señora de la Guadalupe, which stands at one corner of the principal plaza, and has antique twisted columns like those in the mosque at Cordova, which are the admiration of artists and architects. Over the entrance stands a marble image of the Virgin, presented by Charles V. of Spain, and transported from the seacoast at an enormous cost. This church was over forty years in course of erection, hundreds of men being constantly employed, and they tell a curious story concerning the method used which I have also heard of in other places. Owing to the difficulty of obtaining timber for derricks and platforms, the earth was banked up against the walls inside and outside as fast as a tier of stone was laid, and upon this inclined plane the stones for the next tier were rolled into their places. Then more earth was thrown on, and the process repeated until the roof was placed, when the church was immersed in a mountain of dirt. It is said to have taken thirteen years to clear the inside of

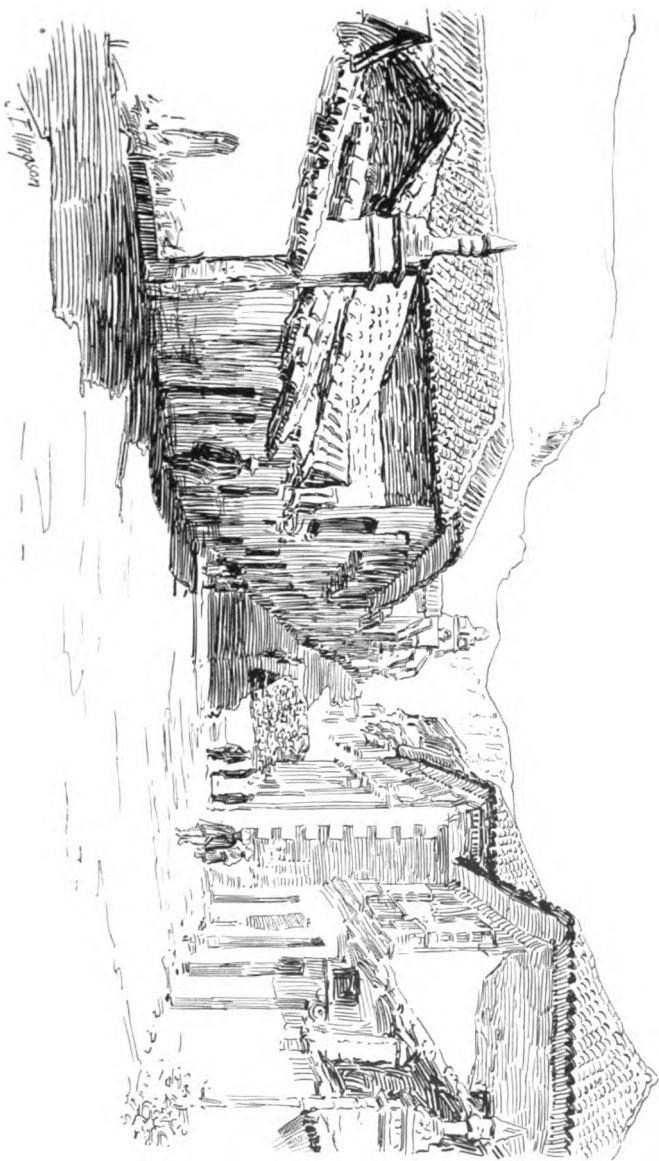
the building, as the earth could only be taken out through the narrow windows and doors.

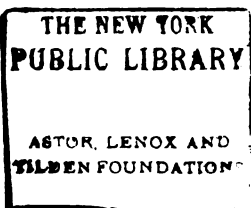
At one time the church of Guadalupe was the wealthiest in South America, richer even than that at Copocobana. Held by trustees in the name of "Our Lady of Guadalupe" were several of the richest mines of the country and some of the largest haciendas. But most of this property has been lost in one way or another, and the mines have been abandoned. During flush times the church treasury was the receptacle of an enormous amount of jewels, votive offerings and legacies from pious devotees, but these also have been stolen by the officers of the government and by revolutionary leaders, until the only object of great value that remains is an image of the Virgin made of silver, life size and adorned with jewels of great price. One pearl, about the size of a pigeon's egg, has been set in a fashion to represent a greyhound, probably because the donor was preserved from an attack from such an animal. Another votive offering heavily set with jewels represents an ox; another a frog. The robes of the figure gleam with rubies, diamonds, emeralds, sapphires, pearls and other stones of lesser value. The image is valued at \$2,000,000, and up to the present time has been kept sacred from the rapacious adventurers who have sought or occupied the presidential chair. On high festivals it is carried about the streets under a canopy, attended by the president of the republic and the civil, military and ecclesiastical authorities.

There were formerly in the church of Guadalupe twenty-four massive silver candelabras, each weighing 20,000 ounces, but President Melgarejo, being pressed for funds to carry on the government some years ago, seized and melted down all but two, which remain to testify to the splendor of the church in days when the mines of Bolivia were flowing silver. The candelabras are eight feet high, the arms are five feet from tip to tip, and the trunk is as large as a man's body. There is nothing to compare with them except two candlesticks in the cathedral at Seville, Spain.

Sucre has not changed for 200 years. It is said that no new building has been erected within the limits of the city for

A Street in Sucre, Bolivia.





more than a century, and apparently none has been repaired. It is the seat of the aristocracy of Bolivia, and was formerly one of the richest communities in all the world, but the depression of the mining interests has cut down the incomes of its most prominent citizens, and their refusal to adopt modern ideas and accept modern innovations has been their ruin. The old families still spend considerable of their time in Paris, and send their children to France and Spain to be educated. They buy expensive pictures and jewels, and keep in touch with art and literature, but have a stubborn aversion to modern methods of doing business and a violent hatred of foreigners.

Bolivia is the third silver producing country in the world, notwithstanding her isolated position, her primitive processes and lack of transportation facilities. The United States and Mexico alone exceed Bolivia in the amount of silver bullion produced, and an official report shows that only 134 mines are in operation with more than 10,000 that have been abandoned because they are unable to compete with those in other countries which are more accessible and are provided with improved machinery.

The province of Potosi has suffered more than any other part of the country from this cause. More than 2,000 mines have been abandoned in that great silver belt, where the vast operations during the last three centuries represent results that are almost incredible and were achieved by the enforced and unpaid labor of the Indians. The records kept at Potosi, where the mint has been located in the same picturesque old building for 300 years, show that between 1545, when the records begin, and 1824, when they close with the declaration of independence, the mines of Bolivia produced \$3,406,366,035 in silver, and that the mountain of Potosi alone, which is a mass of silver ore, during the same period contributed \$1,532,948,142 to the wealth and glory of Spain. From 1800 to 1897 the product of the mountain of Potosi amounted to \$1,386,951,258, making a total of \$2,919,899,400 from that single deposit.

This seems incredible, but it is probably below rather than

above the truth, because the statistics are based upon the official returns of the tax of 20 per cent on the gross output which was annually collected for the Spanish crown. Human nature was the same then as now, and in those days people were just as reluctant to pay taxes.

Gold, unlike silver, is not subject to export duty, therefore there is no means of ascertaining the value of the product, but it is comparatively small and even infinitesimal when measured with the output of the mines during the days of the Inca dynasty. Prior to the Spanish conquest, in 1532, gold was a sacred metal, consecrated to the chief deity, the sun. It did not enter into commerce, and was sought not for gain, but for the adornment of the temples, the palaces and the sacred vestments of the priesthood and the royal household. The traditions of the Indians agree that the northwestern provinces of Bolivia were the principal sources of the gold that excited the cupidity of the Spaniards, and relate that once in every three months a trail of llamas came to Cuzco from that direction bearing bladders full of gold dust as offerings or tribute to the king. These bladders, called "rosques," are still used by the Indians for transporting gold.

The traces of their prehistoric work and the remnants of their rude mining instruments are still found in several parts of Bolivia, and although with their primitive processes they were unable to extract metal from quartz, and were compelled to content themselves with working the placer deposits, history furnishes no parallel for the accumulation of treasure that was found in possession of the Incas at the time of the conquest. And, in revenge for the sacking of their cities and temples, the assassination of their sovereign and the destruction of their empire by the Spaniards in their insatiable greed, the Indians destroyed and concealed the mines from which the treasure came.

Gold mining is therefore somewhat limited in Bolivia to-day, and with a few exceptions is carried on only by the Indians in a small way. The total product probably does not exceed \$100,000 a year, and most of the dust is brought to the "rescates de oro," or annual sales of gold, which take place at

several of the mining centers, when buyers from Sucre and La Paz meet the Indian miners and bid for their dust.

Col. Thomas H. Anderson, of Washington, D. C., who was minister to Bolivia under the Harrison administration, attended one of these "rescates de oro" at the village of Chuchuiaya, where it has been held annually for more than two centuries, and he says that there were at least 3,000 Indians present, each with a little gold dust which they were selling to the speculators for 28 bolivianos, or about \$16, an ounce.

Fabulous stories are told of the output of some of the mines that were abandoned centuries ago, but are still supposed to contain large deposits. A number of prospectors, mostly from the United States, are now looking up properties in Bolivia, and it is the hope of each to stumble upon the ancient washings of the Incas.

The hostility of the Indians makes gold hunting in Bolivia rather dangerous, and, although no actual violence has been committed thus far, some of the prospectors tell of very exciting experiences in the interior.

The tax on silver, which is 80 cents a marc, Bolivian money, or about $37\frac{1}{2}$ cents in American gold, is farmed out by the government and sold at auction to the highest bidder in October every year. No record is published of the exact amount collected, but the bonus paid the government last year was based upon an estimated production of \$11,000,000. More than one-half of that was produced by the famous Huanchaca mine at Oruro, owned by ex-President Anecito Arce. This is claimed to be the most profitable silver mine in the world at present, and is the only one in Bolivia that is fitted with modern machinery. Its owners have built a railway from Oruro to Antafogasta, on the Pacific coast, for the purpose of getting their ores and bullion to market. Ores yielding 165 ounces of silver to the ton are shipped to Europe in bags, while those of lower grade down to fifty ounces are treated at the mines, and those carrying less than fifty ounces are rejected as worthless.

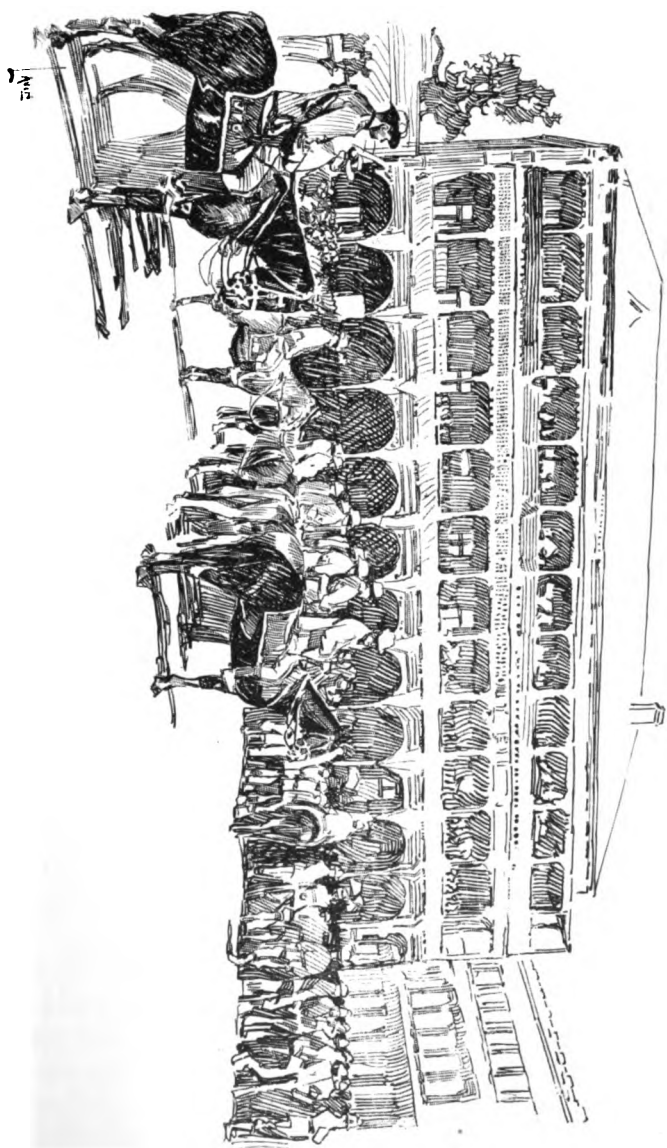
It would amuse an American miner to witness the primitive methods that are used in this country. Most of the ore is carried from the mines in a blanket on the back of an Indian

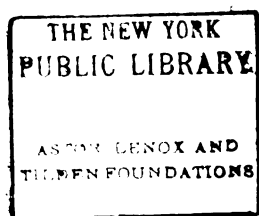
who climbs a notched pole to the top of the shaft, or is hauled up by hand in buckets made of cowhide. The ore is first passed through a crusher, separated by hand by Indian women and girls, and then milled with a "quimbaleta," a large, smooth boulder rocked back and forth over a flat bed of stone or cement upon which the metal has been spread. In some of the more progressive mines they have a "trapiche," which is a large wheel or roller of cut stone like those used in laying pavements. This is rolled back and forth upon a bed of stone, and crushes the ore that is spread beneath it. The crushed ore is then transferred to a sluicibox and water turned upon it. A mill of this kind can handle about two tons a day of twenty-four hours.

The ore, having thus been milled and washed, is taken up by quicksilver and placed in a cast-iron pattern and pressed, which gives it form and expels a large percentage of the quicksilver. It is then placed in a retort, where the remaining quicksilver is expelled, leaving a porous mass of pure silver in the shape of a pineapple, which is known as "plata pina," or silver pineapple.

Although the mountain of Potosi is by no means exhausted, and, according to the opinions of the experts, contains as much more silver as has been taken out, it is worked to only a limited extent, because the price of bullion is so low that it cannot compete with mines like Huanchaca, which has modern machinery and can send its ore and bullion to market by railway instead of on the back of a llama. Very few other mines pay expenses.

Copper and tin are quite as plenty as silver and gold in Bolivia, and it is asserted that the tin deposits in Oruro and the copper deposits in La Paz are unsurpassed in the world, but they suffer from the same difficulties as the silver. It does not pay to work them in competition with other mines that have railway facilities and modern machinery. Tin ore is found at frequent intervals all over the plateaus of Bolivia, but the excessive freights to the Pacific coast, made necessary by the employment of llamas and pack mules, increase the cost of shipping the ore to such a degree as to retard develop-





ment and make it impossible to import suitable machinery. The copper mines often turn out ore containing from 80 to 90 per cent of pure metal, and the average of the tin is 73 per cent.

The mining laws of Bolivia are peculiar. "All minerals of whatever origin and however laid on the ground, whether on the surface or beneath the same, in any manner or form, belong originally to the state," says the statute. "For the purpose of this law the soil and the sub-soil are two different things altogether. Soil is the exterior coat or surface extending downward only to such depths as may be reached by the work of the owner when engaged in agricultural pursuits or when paving or making foundations, or doing any other labor whatsoever different from mining."

Under this law, therefore, if gold or silver is found upon the property of a private citizen it does not belong to him, but to the government, from whom it may be purchased by the finder or any one else to whom he may transfer his rights. It often happens, therefore, that hacendados find prospectors sinking shafts upon their land and digging up their soil without permission, and if they find anything of value the owner is perfectly helpless. The prospector goes to the nearest alcalde, files his claim, pays \$15 and does enough work to entitle him to ownership.

Potosi, the "city of silver," is 13,500 feet above tide water, 2,000 feet higher than Leadville, and 1,000 feet nearer the sky than Lake Titicaca. It lies upon the breast of a most extraordinary mineralogical phenomenon known as "El Cerro de Potosi," which is literally a mountain of silver, and is pierced by a thousand shafts. Potosi was formerly a city of 200,000 inhabitants, but the population is not more than 20,000 to-day, although 50,000 is claimed. Four-fifths of the buildings are unoccupied, and are in different stages of decay. Being so rich, Potosi has suffered from revolutions more than any other city in the Andes, for it has always been the object of contention by revolutionary adventurers whose only ambition seemed to be to accumulate a fortune by any possible means, and most of the houses bear marks of the political warfare of which they

have been silent but suffering witnesses. The streets are narrow, the houses are built in the old-fashioned Spanish style, with heavy stone walls and roofs of red tile. In the interior of many of them are evidences of luxuriance in the shape of paintings and other works of art. Potosi is still the residence of several of the ancient aristocratic Spanish families who are now too poor to move and are dying amid the scenes of their former grandeur.

The minister of the United States at La Paz has for many years represented the interests of the British government in Bolivia, whereby hangs a curious tale. During the reign of one of the several dictators who have ruled over that unhappy country since its separation from Spain, the British minister and his family were invited to dine at the palace where, to their astonishment, they were received by a notorious woman whose relations with the dictator were well understood. The British envoy retired from the palace with his wife and daughter as soon as he recognized his hostess, and their places at the table were vacant. The other guests were not so fastidious. They remained throughout the entertainment, and afterwards enjoyed a dance. The next morning the minister called upon the president and demanded an apology for inviting his wife and daughter to meet such a woman, which the president refused to give; and, when the woman learned the object of his visit, she furnished a practical illustration of the old adage that, "Hell hath no fury like a woman scorned." At her instance, the president sent the minister his passports, and ordered him to leave the capital at once, sending a lieutenant and file of soldiers to escort him to the frontier. As he was passing out of the city, he expressed his indignation in such emphatic terms that the lieutenant took him out of the stage and made him mount a donkey with his face to its tail. In this way the envoy extraordinary of her British majesty left the capital of Bolivia jeered and hooted by a mob of natives. As Bolivia was too small a country for England to punish, Lord Salisbury allowed the insult to pass without retribution, but no minister or consul has ever been sent to Bolivia since, and it is not probable that one ever will be.

Some years later, when President Arce visited London to negotiate a loan to pay for some internal improvements, he called at the foreign office with the hope of being able to restore relations, but the minister of state for foreign affairs told him politely that Her Majesty's government was not aware of the existence of such a country as Bolivia, and pointed to a map upon which it had been entirely effaced.

Along in the fifties, a Scotch sailor, named Penny, deserted from a man-of-war on the west coast of South America, and found his way to the interior of Bolivia, where he worked as a miner and did odd jobs for a living. In the course of time he took up with an Indian woman, and after she had nursed him through a long and dangerous illness he married her to show his gratitude. She reciprocated his confidence, and affection by leading him to an ancient mine, which had been abandoned and partially filled at the time of the conquest in order to keep it from falling into the hands of the Spaniards. With the aid of his wife and a fellow countryman named Mackenzie, Penny cleaned out the rubbish and struck a vein of silver that made him a millionaire. The mine is still operated, and is one of the most profitable in South America.

After having developed the property and organizing his affairs with Mackenzie as his superintendent, some years later, Penny returned to Scotland and purchased the estate near Aberdeen upon which his parents had lived as laborers. His Indian wife could neither read nor write, and could not speak or understand a word of English, but was habitually arrayed in silks and satins, and wore jewels that were the wonder of all the country around. Penny spent his money like a "Monte Cristo," and the fame of his philanthropy will never be forgotten by the people of that region. He brought a son of Mackenzie to Scotland to be educated, and sent him to the best schools. He also adopted a nephew by the name of Craig, the son of a village parson, living near Aberdeen. Penny insisted that both should adopt his name, and, as he had no children of his own, and no prospects of any, promised to make them his heirs.

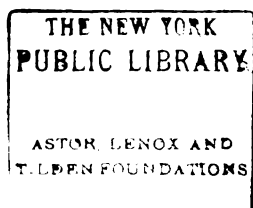
When he died suddenly he left a will bequeathing his mines

and his millions to his wife, and commending to her care and generosity his two adopted sons, Craig and Mackenzie Penny.

Shortly after Craig-Penny started for Bolivia with the widow, leaving Mackenzie, who was then about eighteen years old, in school. During the voyage, by some means, Craig induced Mrs. Penny to marry him, and when they arrived at Oruro he produced a marriage certificate, took charge of the property and dismissed the faithful Mackenzie, who had been sole manager of the mine for many years. Then Mrs. Penny died under mysterious circumstances. Although her husband attempted to keep away the doctors and the priests, the old lady through a servant managed to send word to friends that she needed protection, and before her death declared that she had been poisoned. The scandal was hushed with money, and Penny lived like a lord on the profits of the mine of which he claimed to be the sole owner, but after a time young Mackenzie learned what had transpired in Bolivia, and started for Oruro to protect his rights. Being a British subject, he placed his claims in the hands of Thomas H. Anderson, United States minister to Bolivia, who was in charge of British interests, and the latter with the aid of Dr. Alonzo, recently president of Bolivia, endeavored to arrange an amicable settlement of the controversy, under which the two boys were to have equal shares in the mine. When Mr. Anderson returned to the United States at the end of his term of office he brought young Mackenzie Penny with him, in order that he might complete his education in Washington, but, after a time, when the boy returned to Bolivia, President Alonzo organized a syndicate to buy out both the heirs for \$500,000 each. He now controls the mines and is paying the two heirs in installments, while both are drinking themselves to death at Antofagasta.



Side Entrance to Shrine at Copacabana, Bolivia.



XXI

COPOCOBANA—SHRINE OF THE PATRON SAINT OF SOUTH AMERICA

Not far from the island of Titicaca, toward the south, a narrow peninsula projects into the lake, at the point of which is a small town of great fame. It was the Mecca of the Incas, the residence of a famous idol and oracle, the scene of annual festivities which attract a large portion of the population, and the shrine of the patron saint of Bolivia. Here, in prehistoric times, was the seat of a celebrated oracle, with an extensive group of temples and monasteries, and it was the place of assembly of all the princes, priests, warriors, notables of the empire, as well as the common people, for the spring festivals which took place in August every year.

It must be remembered in this connection, as in all other references to agriculture, that the seasons south of the equator are the reverse of those in the northern zone. Here spring comes in September and the leaves wither and fall in April.

The only ruins of importance which remain of the Incarial structures is a remarkable throne or platform upon the slope of a hill near Copocobana, which was evidently "the seat of the mighty." Enormous rocks which protrude from the soil were utilized for a throne or platform from which the Incas or the priests must have addressed the people and witnessed the festival. It is a marvelous piece of stone-cutting, and there is nothing like it in either Bolivia or Peru. Some scientists hold that its age is greater than that of the Inca dynasty, and that it was the seat of judgment from which the early monarchs pronounced their decrees and proclaimed their edicts in the presence of the people. But however that may be, it is to-day one of the most interesting and extraordinary relics of an extinct civilization.

The diplomacy and the wisdom of the early catholic missionaries is nowhere more strikingly illustrated than by the skill with which they won for their church the reverence of the aborigines. In following a contrary policy the protestants have made a great mistake. The catholics did not condemn or attempt to obliterate the native customs of the Indians, but with exceeding skill turned them into new channels and finally amalgamated the most important of them with the authorized festivals of their own church. Upon the ruins of the pagan temples, and with the same material of which they were built, they erected at Copocobana a magnificent edifice, one of the finest and most beautiful on the continent. They seated upon the throne of the oracle an image of the Mother of Christ, which is more renowned than any other effigy in America, and made her shrine the scene of annual festivals which call together the inhabitants of the entire Andean regions.

Before the farmers begin to plow this inhospitable soil for their spring planting in the month of August, they come here from all over Bolivia and the interior of Peru to enjoy a holiday, to renew acquaintance and to seek the blessing of their patron saint upon the labor of the coming year. The rites and ceremonies partake largely of those of the Incarial times. At the same time they have a religious significance and are conducted under the auspices of the monks of the Franciscan convent, who have the custody of the miraculous image and derive a large revenue from these annual gatherings.

The festival at Copocobana, which lasts six days, is also a trading fair like that at Nijni Novgorod in Russia, the commercial spirit of the Indians manifesting itself in connection with their holiday pleasures and their religious ceremonies. Farmers, merchants and manufacturers take advantage of the gathering to sell their produce, and drive in llama trains laden with merchandise of all sorts for hundreds of miles. They erect booths in the plaza and along the highway. The people of the north exchange products with the people of the south, and the barter amounts to hundreds of thousands of dollars every year.

Copocobana is not an attractive place, judged by our

standard. It sits upon a rocky slope fronting the west and without any green foliage or natural ornaments. The rugged and barren hills that surround it are repulsive. The unpainted houses of adobe that shelter the pilgrims, with their roofs of red tile, are not without a certain picturesqueness, and the dry fields of stubble inclosed by mud fences and interspersed with large lichen-covered bowlders are a novelty to those who dwell in green lands. The landing place is a pier of stone, and from it a narrow crooked lane, bordered by high stone fences, leads to the village. The fields on either side are filled with animals—mules, horses, burros, and llamas—which have brought in the pilgrims from all directions, and find temporary pasture until their return. Every structure is a hotel during the season of the fiesta, in which they pack the people as closely as possible. Near the temple are several enormous tambos, or lodging houses, erected and maintained by the monks for the accommodation of the public, and they are said to be a close imitation of similar establishments that were maintained by the Incas in different parts of the country for the same purpose.

These tambos accommodate several hundred people. They surround a large patio, in which are fountains for pure water drinking, cooking and bathing purposes. The upper floors are divided into small cells and apartments fairly well furnished for the accommodation of the wealthier classes. Most of them bring their own bedding. The ground floor is cut up into large rooms for the accommodation of the poor, who supply their own food and furniture and pay a small fee for the shelter. There are large refectories in which those who have money may obtain cazuela or chupe, the national dishes of the country, that resemble an Irish stew, and on the upper floor regular meals are served to the first-class boarders.

The monasteries during the festival season also accommodate large numbers of people. They were formerly handsome buildings, but are in a state of decay.

Under a stately dome are three remarkable crosses, monoliths of different-colored marble, about thirty feet high, before which are always found groups of kneeling natives. It is a

picturesque as well as a pathetic sight, for the devotees must say a certain number of prayers or pray for a certain time at the foot of these crosses before they are permitted to enter the presence of the Virgin, whose shrine occupies the chief altar of the sanctuary. Upon the pedestals are numerous votive offerings, skulls and other objects of religious significance which have been placed there by the pilgrims.

In the center of the town is a large plaza, the church occupying one side and the other three sides being devoted to shops. Along the walls of the church is a line of eating booths, where cooking and the sale of food are conducted upon a primitive plan that is more interesting than appetizing. Around the three sides of the plaza are rows of booths for the sale of merchandise, food, sweetmeats and articles which have been blessed by the priests.

Every pilgrim who visits Copocobana carries away a badge, which is regarded with envy by those who have not been so fortunate as to attend the festival. It consists of a little sprig of white artificial flowers and is worn in the hat or upon the breast, and wherever you see any person with such an ornament you may know that he has attended the festival.

Squatting upon the ground in the center of the plaza are long rows of silent, solemn-faced women, whose nimble fingers are always busy knitting or spinning wool with the *rucca*, a peculiar implement which is forever in their hands. They sit for hours silent and abstracted.

The great church, which was built in the beginning of the seventeenth century, must have been a beautiful structure when it was new, and even in its present state of decay and neglect it is imposing and attractive. The wood carving is abundant and remarkable. The altar is of hammered silver, 28 feet high and 18 feet across; the pictures are said to be valuable examples of the early masters brought over by the Franciscan monks from Spain. It is easy to see that several of them are of unusual merit, but the canvas is so discolored and the church is so dark that it is difficult to identify them.

The floor is covered with matting made of braided barley straw, and groups of hooded women are always kneeling

before shrines that are embellished with artificial flowers. Before each altar is a long table with tin receptacles for candles, the smallest offering that a poor penitent may make to her patron saint, and thousands of them are constantly burning during the festival week. Here and there is a pathetic evidence of penitence in the form of a cluster of wild flowers laid by the hand of some maiden upon the altar of the Holy Mother. Barefooted altar boys are going about, and priests are chanting masses in the various chapels.

The image of the Virgin of Copocobana, the patron saint of Bolivia, stands upon an altar in a little chapel under the roof that is reached by a narrow winding stairway. The hollow places in the steps give mute testimony to the millions of penitent feet that have turned that way during the several centuries she has been enthroned here, and they have numbered hundreds of thousands every year. We could not get near enough to the altar to observe the image closely, but it is said to be a remarkable piece of wood carving, and to bear an expression that has never been equaled by the carver's art. Every one in Bolivia testifies to the artistic merit of the execution, which is said to have been the work of an ignorant Indian in the mountains whose soul and hands were guided by divine inspiration, and for whom the Blessed Virgin herself sat as a model.

The story goes that this peon appeared at Potosi early in the seventeenth century bearing the image and offered to sell it to the parish priest, who turned him out without any attention. The Indian made his way over the mountains to Sucre, with no better reception, and then performed a weary journey to La Paz over the snow-covered sierras, bearing his precious burden upon his back. There Franciscans from Spain who had recently established a monastery gave him a welcome that was no more cordial, their minds being occupied with matters of greater importance, but they allowed him to place the image in a store room and to sleep upon a pile of sheepskins in a corner of a patio. During the night a monk happened to enter the room where the image had been placed, and, to his amazement, found it surrounded by a brilliant light which pro-

ceeded from its face. He slept late the next morning, and during the day reported the phenomenon to the prior, who made an inquiry; but the peon had departed, no one knew whither.

They traced him to Copocobana, and sent a messenger to call him back, but the monks at the latter place had recognized the merit of the carving and declined to surrender it. The superior of the order, who resided at La Paz, commanded them to send the image to him, and they put it in a boat, but as soon as they started across the lake a terrible storm came on and they were obliged to return. This was repeated as often as they attempted to take the image away, and finally the prior himself came over from La Paz to investigate the matter.

The evidence of divine interposition was so apparent that he decided to leave the image at Copocobana in charge of a small colony of Franciscans that had been established there. Within a few years several remarkable miracles gave the effigy a sanctity and fame that extended throughout the entire country. Pilgrims came to offer adoration; the sick and the halt, the lame and the blind were healed by touching the figure, and from the offerings at the altar this beautiful church was built. In time Copocobana became the most famous religious resort in all America, and for three centuries this virgin has been worshiped by millions. People have come from Mexico, from Central America, from all the republics of South America, and even from Europe, to seek her interposition and pay vows made in time of danger or distress. The monks told us that there were many devotees from the United States also.

The Virgin of Copocobana has an immense wardrobe, including many rare examples of embroidery and lace, and among her jewels is a ruby fully an inch and a half long by an inch in thickness, which, curiously enough, was presented by a Turk who spent some years in Bolivia. It is said to be one of the finest rubies in the world. She has also a valuable collection of pearls, said to be worth many thousands of dollars.

The method of conferring the blessing of the Virgin is quite interesting. Each person who desires to receive it pays

a sum of money to a monk who occupies an office in the cloister of the adjoining convent, and after payment is allowed to pass up the stairs into the little chapel, where the service is continuous during the time of the festival. Bearing a lighted candle in his hand he approaches the altar rail and kneels with the throng of worshippers.

A bridal wreath is suspended by long strips of broad white ribbon in the center of the chapel. In a little gallery over the entrance is a band of music with a cabinet organ, two horns, a flute, a 'cello and a native instrument made of reeds. Behind the altar rail was a monk, assisted by two barefooted acolytes. As the devotees approached the altar the acolytes took the candles from their hands and placed them in a rack prepared for that purpose. They were then arranged, kneeling as closely together as possible, in front of the altar rail and a robe of white satin embroidered with designs in silver, which was formerly worn by the image, was spread over their heads. The officiating monk laid a sort of collarette upon the mantle and uttered some words. The robe was then lifted and the worshippers went away.

This continues all day long during the festival season. The devotees were chiefly Indians from the mountains, barefooted and wearing ponchos. Among them were some well-dressed men and women with intelligent faces and devout demeanor. One of the engineers of the steamer Coya, a Peruvian from Puno, came to the altar while we were witnessing the ceremony and slipped quickly away in the crowd after receiving the blessing.

So far as I can learn the contribution is voluntary, and the amount depends upon the wealth and condition of the suppliant.

The image is about three feet in height, and, with the exception of the face and hands, is covered by embroidered robes and decorations of gold and silver of elaborate and artistic designs. The crown of gold, heavily set with jewels, is an elaborate piece of work, and the halo of the same metal at least a foot in diameter is encircled by ten diamond stars. In her hand the Virgin holds a golden candlestick, and her

arm supports a basket of gold filigree work which is said to be filled with costly jewels. The buckle of her belt is a cluster of large diamonds, and her robe sparkles with other gems.

A celebration of the feast of the Asuncion of the Virgin occurred in the plaza in front of the Church of the Asuncion while we were at La Paz. It is one of the most popular festivals in the calendar and called in from the country several thousand Indians, who took possession of the town from noon of the day preceding the anniversary until toward night of the day following.

During the afternoon and evening before the feast the peons began to come into town in groups of from five to forty, generally driving a bunch of burros or llamas laden with the products of their industry to sell in the market place. Everybody came, young and old, infants slung in shawls over the backs of their mothers, and poor, decrepit old creatures that were bent and haggard with age. The first comers took possession of the plaza in front of the church and the streets that approached it, and spread out their wares on the pavement. Others produced tables and stands and booths from some mysterious quarter and decorated them with bright-colored muslins, festoons of tissue paper and artificial flowers for the sale of food and chicha and raw alcohol, which is the favorite drink of the Bolivian Indians and is consumed in large quantities. They want something that will take hold of their vitals, which seem to be made of leather, and are as tough as the india rubber of their forests.

That night there was a good deal of carousing and some preliminary ceremonies which we witnessed with great interest, although we could not understand their significance. Most of the people who came from the country slept on the pavements in the open air with their ponchos wrapped around them and their heads and faces enfolded in many wraps, while their bare feet and legs, according to habit, were exposed to the freezing atmosphere.

In the morning everybody went to church. In order to accommodate the enormous crowds the regular priest of the parish was assisted by several monks from a neighboring mon-

astery, and one mass succeeded another from daylight until noon. The Indians were very devout in their demeanor. They knelt on the stone floor through the service with bowed heads and clasped hands, and expressions of adoration on their faces. It was a solemn and impressive spectacle. Each worshiper threw into the plate a contribution, large or small, according to his means, although the most of them belonged in other parishes, where they support the priests and pay fees much larger in proportion than the customary contributions to religious causes in more civilized countries.

Along about 2 o'clock in the afternoon began the dances and other ceremonies which have been inherited from the days of the Incas and are said to be of serious significance, like the ghost dances of the Sioux, the corn dance of the Navajoes, the snake dance of the Moquis, the sun dance of the Crows, and other similar rites practiced by the red men of North America. Professor Bandelier, who has been studying the ethnology of the Aymara race for several years, says that these dances have a profound hidden meaning which is fully understood only by the leaders and head men, but is appreciated to a greater or less degree by the ignorant and even the children.

Each clan contributed a group of professional dancers who had been trained for that duty, and were adorned with masks and costumes that were often hideous and grotesque. Some of the men were dressed in the garb of women, some represented demons and animals of the forest and the mountains. One was clad in robes that were intended to reproduce those worn by their former sovereigns, the Incas; others wore imitations of the vestments of the priests that attended the temples in prehistoric times. Some were dressed like the bushmen of Africa; two or three carried upon their heads enormous bonnets made of the brilliant plumage of the birds of the Amazon, and several wore tunics of gorgeous birds' skins stitched together, with the claws and teeth of animals in strings about their necks. There was a good deal of silver and brass in their ornaments, and some of the embroideries were of artistic design. It would take columns to describe the costumes accurately were it possible to do so.

Each group of dancers was attended by a band of musicians playing their native instruments. There were modern drums, imported from Europe, but more of native manufacture made of hollow segments of trees and covered with goat skins; native guitars and mandolins, rude pipes of bamboo, and long trumpets of reeds. There was no harmony or melody in their music, and it was all in the minor key; but the airs were easily distinguished because they were few in number and were so frequently repeated. Those who were not singing or dancing kept up a continuous chant in dreary monotonies and the leaders moved among them gesticulating violently with their heads and arms.

At intervals the music and motion would cease and the performers would refresh themselves with copious draughts of chicha and alcohol. The dancing and drinking continued all the afternoon, and far into the night, until everybody was in a distressing state of intoxication, the pavement was covered with bodies of men and women who were unconscious from drink and fatigue, and the remainder were howling in the streets.

An interesting character frequently met with in the Andes is the callaguayas, or Indian doctor, as he is familiarly known to the people. You find him everywhere, resting on the benches in the plazas in the city, tramping over the mountain trails, sunning himself against the wall of a cabin by the railway station, drinking chicha in the market place, inspecting cattle in the corral of the hacienda, and curing the sick peons in their mud huts. You find him, too, in the railway cars and among the deck passengers on the coast steamers, where he pays his way by practicing his profession. With no wardrobe but the suit he wears and a bright-colored poncho, he travels barefooted from the Isthmus of Panama to the Straits of Magellan, carrying upon his back a pack filled with dried herbs done up in neat paper packages, cheap jewelry, pocket handkerchiefs and ribbons, watches and other articles for personal adornment, knives, forks and spoons, scissors, small mirrors, and sometimes combs and brushes and other merchandise, which he sells to the people for cash, or trades for eggs and

poultry, chocolate beans or cocoa, the same to be exchanged at the next town for more portable property.

He is not only trader, but tinker, and is as skillful as a Yankee in mending all sorts of broken articles. If there happens to be a clock that won't go or a leaky tin pan, or a broken piece of crockery he mends it. He tells fortunes, interprets signs and omens, prepares love philters, gives advice to people in trouble, and from long experience and a thorough knowledge of human nature, together with a reputation for superior natural wisdom, he is usually able to do efficient service in the most delicate matters. He is a conjuror and a magician, and does all sorts of tricks by sleight-of-hand. He relieves persons and animals that are bewitched; he sings sentimental and patriotic songs, and improvises to suit occasions, like the minstrels that Sir Walter Scott tells us about, and the troubadours of ancient Spain, but these are only incidental diversions to occupy time and increase his popularity and his income. His chief business is that of a physician both for mental and physical ailments and for both man and beast. If a cow or a donkey is sick he serves as a veterinary surgeon; if distemper invades the llamas or foot-rot the sheep he has remedies that are effective, and the natives depend upon these wandering Arabs of the Andes to cure them of all diseases. His knowledge of botany is as mysterious as it is comprehensive, and the most astonishing stories are told of his cures.

Mr. Meier, the United States consul at Mollendo, says that some years ago a friend of his in Lima was lying at the point of death with a disease which baffled physicians who brought diplomas from the medical schools of Paris and Vienna. One evening, after a consultation, two of them stood talking of the case at the sick man's door without noticing a humble bare-footed Indian who leaned against the wall. As they departed the Indian entered the patio and asked to see the sick man. The family referred him to the attending physician, who, amazed at his audacity, exclaimed:

"What do you know about a disease that puzzles the best physicians in Lima?"

"I have herbs that will cure everything," said the callaguayas.

The doctor smiled in scorn, and turned away. The Indian opened his pack, unfolded a little paper and handed a single leaf to the physician, asking him to smell it. As the doctor did so his nose began to bleed, and he was unable to stop the hemorrhage. With stolid composure the Indian stood by, and after a time handed another leaf to the doctor, saying:

"If you will put that to your nose the bleeding will stop."

The result was what he promised, and the physician began to question the Indian as to the nature and origin of the herb. Then, as a desperate resort, he described his patient's symptoms and asked if the callaguayas had any remedies that would suit the case. The Indian produced his stock of herbs, selected what he thought was necessary, brewed a tea and gave it to the sick man, who soon recovered.

Other stories of a similar sort are told in the interior and the American miners in the mountains of Peru and Bolivia, who are often afflicted with climatic fevers, have the greatest confidence in the efficacy of the remedies and the skill with which they are administered by these migratory medicine men. Their botanical knowledge, however, has never been fathomed by science. They preserve the greatest secrecy concerning the herbs they carry in their pack and the source from which they obtain them.

Nearly all the callaguayas come from the province of Mu-naecas, and their headquarters is at the town of Curva, in the heart of the Andes, in the province of La Paz. The natives call them "Sons of Santiago"—Saint James—who is the patron saint of Bolivia. Although they usually confine their operations to South America, they have been known to go to Central America, Mexico and even to Europe, and a friend of mine here says that some years ago he found a callaguayas from the town of Curva kneeling beside him in a church at Rome. There were two others in the party, and they told him that they had traveled two years, practicing their profession with great success, in Spain, France and Italy.

The origin of the callaguayas is the subject of conjecture,

but it is certain that he is a relic of Inca times, when the sovereigns had medical men to minister to their ills and minstrels to furnish entertainment for their court. They had jesters and conjurors like the kings and feudal lords of the middle ages, whose feats, as reported by the Spanish invaders, were unsurpassed by the magicians of Egypt and other oriental nations.

It was one of the fixed laws of the Inca nation, which with many others prevails to the present day, that a son should follow the profession of his father, and it is not improbable that the callaguayas have inherited their knowledge of botany and materia medica from their ancestors in prehistoric times. There is a sort of Masonry or guild among them, coming as they do from the same province, and in the desolate mountains they maintain for mutual protection huts in which they can find shelter from cold and storms. A circle of stones eight or ten feet in diameter is first laid by way of foundation to a height of five or six feet, banked up on the outside with earth and thatched with straw and rushes, which are weighed down against the wind by stones. In these huts, which are found along trails that are far from human habitations, the wandering callaguayas seeks shelter and makes himself as comfortable as possible. He carries in his pack a little jerked beef, called *tosajo*, parched corn, barley meal, beans and coca, and makes use of the ever-present fuel, the llama dung which is found along all over the mountains, and a low shrub like the grease-wood of our western plains, called *sin decaspi* (the wood that burns), which is full of resin and burns like a pine knot for a few moments.

The natives have so much faith in the skill of the callaguayas that when he pronounces a sick man beyond recovery they abandon all further attempts to cure him, give him little food or care and compel him to spend the remaining hours of his miserable existence listening to messages which they want him to carry to friends who have preceded him to the other world. In some of the tribes in the interior of the country and even along the seacoast it is their custom to put out of misery people who have been pronounced fatally ill. There is a man

appointed expressly for this purpose, an executioner of unfortunates, who dispatches them by pressing his knees upon their breasts until they are unable to breathe.

In addition to his other manifold occupations a callaguayas is a sort of traveling postoffice and newspaper. He knows everybody, and as he travels from village to village through the mountains he carries messages between friends and brings the answer upon his return trip, although it may be months before he comes again. He bears gifts and takes charge of small packages, for which he receives a fee, and his arrival in an isolated pueblo is as welcome as a bundle of letters by people who are far away from home, for he relates all the interesting gossip he learned on his journey.

There is no question of the resources of Bolivia. George Earl Church, the famous American engineer, who made a thorough exploration of the country several years ago, summed up his observations in these words: "The mountains are weighted down with silver, copper, tin and other metals, and the people are gazing upon a wealth sufficient to pay the national debts of the world, and yet they are unavailable for lack of means of communication. There is abundant evidence that not a river carries its waters from Bolivia to the Amazon but washes auriferous deposits as rich as any in California or Australia, and for lack of power to take machinery to them they did not produce to exceed £60,000, when millions should have been produced. I found millions of sheep, llamas and alpacas browsing upon the mountain sides, and not a cargo of wool was exported; vast herds of cattle roamed the plains, and yet an ox hide was worth scarcely more than a pound of leather in the European market; hundreds of tons of the richest coffee in the world rotting on the bushes, and only about ten tons per annum were sent abroad as a rare delicacy; abundant crops of sugar in the river districts were considered a misfortune by the planter, because there was no market; the valleys of Cochabamba were rich in cereal wealth, but the crop was unsalable when too great for home consumption; not a valley or mountain side but gave agricultural, medicinal and other products which command ready sale in any foreign market;

sixty-five kinds of rare and beautiful cabinet woods stood untouched by man in the great virgin forests of the north and east."

While the facilities for transportation have improved since the above was written and the departments of La Paz and Oruro now enjoy steam communication with the outside world, the remainder of Bolivia is as isolated as it was in the time of the Incas, her vast natural wealth is inaccessible and the great bulk of her products cannot be exported profitably.

The population of Bolivia is somewhere between 2,000,000 and 3,000,000. There has not been a census since 1854, when the enumeration showed 634,345 whites and cholos, and 1,691,781 Indians, a total of 2,326,126. The popular impression is that the total has decreased since that time, but the number of cholos has increased. They are the mulattoes of the country, the result of a mixture of white and Indian blood, and furnish the middle class, the mechanics, small shopkeepers and domestic servants. The preponderance of Indians, who are absolutely illiterate and have a strong aversion to education, makes improvement seem almost hopeless. The cholos probably number 400,000 and there are not more than 150,000 whites in the entire country.

There is a public-school system provided by the municipalities and the state under the supervision of a member of the cabinet. Education is free and compulsory; nevertheless, in 1890, when the latest reports were published, there were only 27,754 pupils reported out of a population of more than 2,000,000, which does not promise much improvement for the next generation. For primary education for the common people there were only 493 schools in the entire territory of 784,554 square miles, which is less than an average of ten for each province, and only 649 teachers and 24,244 pupils. There are five universities, in which 511 young men are studying law, 105 are studying medicine, and 768 are studying theology, a total of 1,384. There are sixteen colleges and preparatory schools, with 2,126 students and ninety-one teachers.

The language of the white people is Spanish, but in the fields, the markets and the workshops the Indian dialects are

spoken, and most of the natives are familiar with the Quichua or Aymara languages, having acquired them in childhood from their nurses and servants. Those are the languages of the household, and not 10 per cent of the population can speak Spanish.

The best parts of Bolivia—the most fertile soil and the richest stores of mineral wealth—are on the Atlantic slope. The western slopes are sandy deserts, which will produce abundantly when they can be reached by water. Between the ranges of mountains, the plateau, or great Andean basin, although it is the most thickly settled portion of the republic, is cold and barren, but on the eastern territories everything that nature has provided for the benefit of mankind is found in the greatest luxuriance. That part of the country, however, is inhabited by savage tribes of Beni Indians, who are hostile and retard its settlement. They are migratory and barbarous, they have no written language and no fixed homes. The Quicha and Aymara Indians live in villages, and their language is not only printed, but has a grammar and a dictionary, and portions of the holy scriptures have been printed in several of the dialects.

Bolivia has no seaport on the Pacific Ocean. It formerly owned a long strip of the coast, which was stolen by Chile during the war of 1881. Chile has offered Bolivia a port at what is known as Victor Run, or Victor Gully, about eighteen miles south of Arica, where there is a good harbor and a valley that slopes gradually from the mountains to the sea, but the natural outlet of the country is the Amazon, and within that territory are over 3,000 miles of navigable waters, which might easily be opened to commerce but for the existence of rapids in the Madeira River at the northeastern boundary of the republic. In 1833 the government offered a reward of \$20,000 to the first person who reached Bolivia from the Atlantic Ocean by steamer by way of any river that runs from south to north, and \$10,000 by way of any river which flows from north to south. That decree stimulated exploration and demonstrated that it was possible to reach the Atlantic by canoe via the Paraguay and Parana rivers, as well as the Amazon, but the

prize was never applied for. The government has sent out several exploring parties, and several concessions have been granted for the construction of a railway around the rapids of the Madeira, but the undeveloped condition of the country, the inhospitable climate and the hostility of the Indians have prevented the investment of the large sum needed for that purpose. A considerable portion of the forest and agricultural products of Bolivia reach market by way of the Amazon—particularly coca, coffee and rubber—but it is carried on balsas and canoes to the foot of the rapids, where there is a town named San Antonio, the terminus of steam navigation on the Amazon, 700 miles from its mouth.

The rubber forests of Bolivia are practically unlimited, and are a source of wealth much more easily reached and developed than the mines. There is no gambling or risk in a rubber quinta, provided the owner can obtain labor and can send his product to market. The demand is unlimited and increasing every year, and the government of Bolivia or of Peru will sell unlimited areas of natural forests of rubber trees at a nominal price to any one who will develop them. The trees grow on the eastern slope of the Andes and in the warmer valleys, and the forests can be reached on muleback from La Paz, from the steamboat stations on Lake Titicaca, and also from the railway that runs from Puno to the north of Peru.

The first step in starting a rubber plantation is to clear away the underbrush and cut out the dead trees, which is a task of great labor and difficulty, because the vegetation is dense and represents the growth of ages; but when it is once done the property has increased in value a hundred fold, and the rest of the job is easy. Thereafter all that is necessary to do is to keep the ground clear, see that the trees have plenty of light and air, are free from parasites and are allowed to enjoy the food which nature has stored in the soil. Formerly, with that improvidence which seems so natural to mankind, the rubber trees were cut down in order to get the sap, but nowadays they are cultivated like an orchard, and science has demonstrated that good care will be repaid a thousand fold.

The process of making rubber is much like that of making

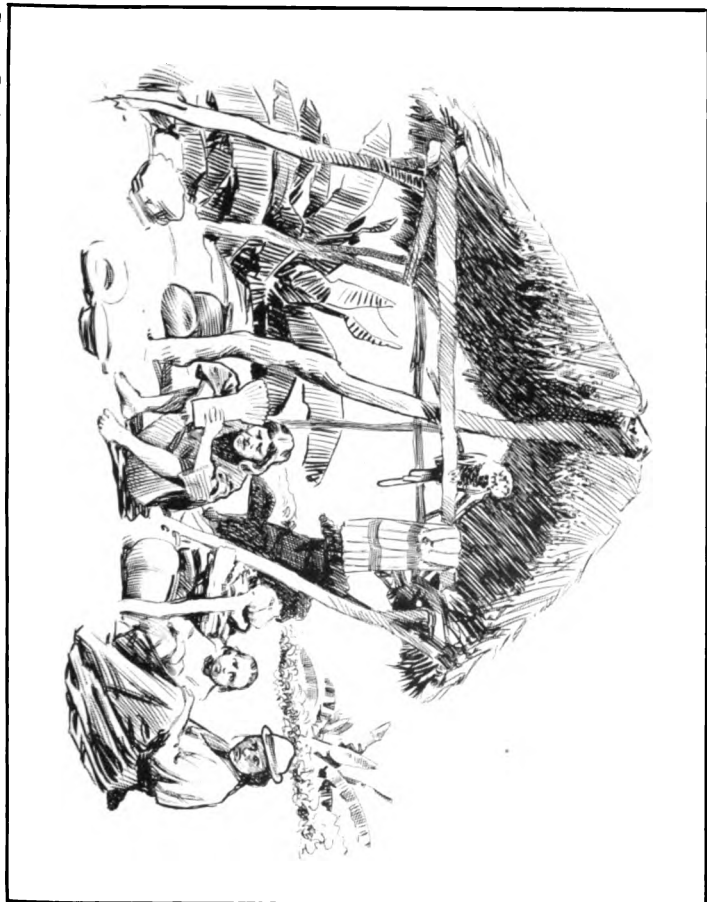
maple sugar. The trees are tapped when the sap begins to run, and the milk, as they call it, is boiled in a big kettle until it is reduced to its proper consistency. In some parts of Brazil the natives find a vine whose juice will cause the milk of the rubber tree to coagulate without the use of heat, but the common process is to "boil it down" with all its impurities and allow the manufacturer to refine it.

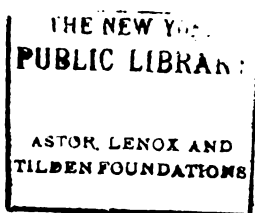
It is admitted that the coffee grown in the Yungas Valley is the finest in the world, but very little of it reaches the market, and that is sold to epicures in France and Spain or sent as presents by people in Bolivia to their friends in Europe. The Yungas berry is very small—about half as large as that grown in Brazil and Central America—but it has great strength and a fine flavor.

The most useful to mankind of all the natural products of South America is probably the familiar drug made from the bark of the quina tree, which was used by the Incas as a cure for fevers and malarial diseases. A Jesuit missionary discovered this fact and brought some of the bark to Lima, where its efficacy was demonstrated by the countess of Cinchon, whose husband was a viceroy of Peru in the early days of Spanish domination. She sent it to Spain as a remedy for fevers, and no drug mentioned in the dictionary has been consumed in larger quantities or has afforded greater relief to suffering humanity. It was originally known as Jesuit's bark, because it was brought to notice by those enterprising and inquisitive scouts of the church. It was more extensively advertised as Peruvian bark, but the botanical name is *cinchona*, in compliment to the fair lady who first sent it to civilization. *Cinchona* is found all through the Andes, from the Argentine Republic to the Spanish main, but the supply was greatly diminished by the perversity of the Spaniards, who cut down the trees before they stripped them. That has been prohibited by law, and only a portion of the bark may be taken from the trunk of a tree each year, and not more than nature is able to replace.

England, with that provident foresight which characterizes much of her political economy and colonial policy, several

Coca Gatherers, Bolivia.





years ago sent Mr. Spruce, the eminent botanist, to Peru. He made a large collection of cinchona plants, which were transplanted in Ceylon, India, Burma and other colonies of the east, where they have been since cultivated with great success, so that most of the world's supply now comes from the British possessions. During the last few years the Germans have taken hold of the trade in Bolivia, and are now cultivating it with their usual skill. Probably 6,500,000 trees have been set out in the last ten years by them. One man has put out at least 2,000,000 trees, and another nearly as many. The "quinales," as they are called, are still in their infancy, but are beginning to pay, and promise to be very profitable. The trees are just now large enough to lose a little of their bark, but they will soon be the source of a large supply.

Coca is also cultivated in a similar way and promises equal profit. It was cultivated by the Incas in terraces on the mountain sides, which have been compared to the vineyards of Tuscany and the holy land. It is a member of the flax family—a shrub that looks like the orange and bears a small white blossom and bright green leaves. The leaves are plucked by women and children, dried in the sun very much as the Chinese prepare their tea, and then inclosed for export in green hides, which are sewed up with stout cord and rolled in the sun to dry. The shrinking of the hides presses the coca leaves into a compact mass such as you see in the warehouses of manufacturing druggists. The Indians of Bolivia have adopted this method as a form of torture, and sometimes sew their victims up in green hides in the same way. When the hide dries it shrinks and crushes the bones and flesh with the most excruciating agony.

Nearly all the Indians of Bolivia and Peru chew coca, which is the strongest nerve tonic known, and under its influence perform incredible labor and endure remarkable fatigue. The influence of moderate doses is stimulating to the nerves and to the muscular system. It also produces an intellectual excitement, sharpens the sight and hearing, increases the skill of the hands and awakens all the senses. But when taken in excess it is worse than opium or any other intoxicant. A

"coquero" or coca drunkard cannot digest food, his taste is destroyed, and he loses the sense of smell. He can eat the most disgusting food and drink the most nauseating draughts without the slightest sensation, as the mucous membrane is paralyzed, the throat, the interior of the mouth and the tongue, as well as the palate, are in a state of insensibility. "Cocaismo," as the habitual use of coca is called, produces moral and intellectual degradation more rapidly than either opium or alcohol. It perverts human nature, and its tendency is to develop brutality and vice. The use of the drug by the Indians of Bolivia is said to be the cause of their vicious disposition.

Used in moderation by the shepherds in the snowy pampas, by the arrierios who follow trains of llamas and donkeys over the mountain trails, by the toilers in the mines, and others whose labor is attended by privation and fatigue, and for its medicinal properties, which are well known, it is a great blessing.

The Indians chew the ordinary dried leaf with potash made from the skins of potatoes, rolled into a little ball called an "acullico," which is chewed deliberately and retained in the mouth for twenty-five or thirty minutes. A little pouch, which every Indian wears around his neck or attached to his girdle to carry his supply is called a "chuspa." By the moderate use of coca an Indian can pass several days and nights without food, and people often make journeys through the mountains with no other sustenance.

The quinine plantations, or quinales, as they are called, which have been started in this country by the Germans, are usually found on rough and broken mountain sides and at altitudes of 3,000 or 4,000 feet above the sea. The trees will grow as high as 8,000 feet, but they flourish best at an elevation of about 4,000, for they require a great deal of sun, rain and wind to reach perfection.

Most of the groves have been raised from the seed, which is gathered in the early summer months and planted in hot-houses. When the plants are about six inches high they are transplanted upon the hillsides, which have been cleared of

underbrush and plowed up beforehand, so that the young roots can secure the benefit of all the moisture and plant food in the soil and the heat of the sun. For shelter they are partially covered with twigs, straw or other light stuff, which also serves to keep the moisture and heat in the ground. After about two years this shelter is raked off, the plants are carefully inspected, and those which are not promising are replaced by new ones. The ground around them is kept clear of weeds, and the young trees are carefully trimmed twice a year. In five or six years the tree will have reached the height of twelve or fourteen feet, and its trunk will be straight and slender, with a diameter of about six inches. It resembles the orange tree in size and shape, and the peculiar gloss of its leaves.

Two or three times a year three or four strips of bark about two inches wide and from two to eight feet long are cut from the trunk and thrown upon a paved yard to dry, where as the moisture evaporates they curl up like cinnamon. Within a year or so nature replaces the bark that has thus been stripped off, and the tree is stripped again in other places. As it grows older smaller strips can be taken from the stronger branches, and a mature tree will produce an annual average of about four pounds of bark.

The bark dries in a few days, and is packed for shipment in rawhide bales. The most of it is shipped from Arica and Mollendo.

The Indians regard the coca with extreme reverence. Von Tschudi, the Austrian scientist, who made a most thorough study of the ancient customs of the Incas, says: "During divine worship the priests chewed coca leaves, and unless they were supplied with them it was believed that the favor of the gods could not be propitiated. It was also deemed necessary that the supplicator for divine grace should approach the priests with an 'acullico' in his mouth. It was believed that any business undertaken without the benediction of coca leaves could not prosper, and to the shrub itself worship was rendered. During an interval of more than 300 years Christianity has not been able to subdue this deep-rooted idolatry, for

everywhere we find traces of belief in the mysterious powers of this plant. The excavators in the mines of Cerro del Pasco throw chewed coca upon the hard veins of metal in the belief that it softens the ore and renders it more easy to work. The Indians even at the present time put coca leaves in the mouths of dead persons in order to secure them a favorable reception on their entrance into another world, and when a Peruvian on a journey falls in with a mummy, he, with timid reverence, presents to it some coca leaves as his pious offering."

One of the scientific explorers who has been working up in this region told me of his experience with a coca chewer. "A man was employed by me," he said, "in very laborious digging. During the five days and nights he was in my service he never tasted food and took only two hours' sleep each night, but at intervals of two hours and a half or three hours he repeatedly chewed about half an ounce of coca leaves and kept an 'acullico' continually in his mouth. I was constantly beside him, and therefore had the opportunity of closely observing him. The work for which I had engaged him being finished, he accompanied me on a two days' journey across the level ground. Though on foot, he kept the pace of my mule and halted only for the chaccar (chewing). On leaving me he declared that he would willingly engage himself again for the same amount of work, and that he would go through it without food if I would but allow him a sufficient supply of coca. The village priest assured me that this man was 62 years of age, and that he had never known him to be ill in his life."

Driving in the country one day, I met upon the road a group of peons—a dozen or more. Two of them staggered along with a rail upon their shoulders. Hung from the rail was a hammock, and lying in the hammock was a man ill of fever, being carried six miles under a blistering heat in the middle of the day to the hospital. The only shelter he had from the sun was a woollen poncho thrown over the rail, which hung down on each side of him, and there he lay, with every breath of air kept from him, and that heavy poncho flopping in his fevered face. He was a man of large stature, and not an easy load, so that the men who carried him had to shift

their burden to the shoulders of others every few minutes. The change was attended with a great deal of jabbering and considerable excitement, but the sick man lay motionless, with his livid eyes fixed upon vacancy and a rosary in his hands.

"Why don't you wait till the cool of the day to make the journey?" I asked.

"Because the morning and the night air are bad for fever," was the reply.

"Isn't there an ambulance you could get?"

The men stared for a moment as if puzzled by the inquiry, then exchanged a few words in undertones. Finally one of them explained that they did not know what an ambulance was.

I described one to them as they rested under the shade of a mango tree, and the leader remarked that such a vehicle would not be as good as a hammock because the roads were so rough, and I concluded he was right.

There are few roads in South America and those are found in the neighborhood of the large cities. Nine-tenths of the interior transportation is done on the backs of donkeys, little patient burros so small and light that a man could lift a large one, yet they are the strongest beasts in the world in proportion to their size and can carry all that can be packed upon them. Their limbs are not larger than the arms of a child, and their hoofs are about the size of a base ball cut in half, but they will climb any mountain path that a man can scramble over, and are as enduring and patient as time itself.

Two bags of coffee weighing 100 pounds each can be strapped on the saddle and then the owner will mount and ride upon the top of them with his legs hanging down each side of the donkey's nose. I have often seen two men, and occasionally three, on the back of a little beast that would not weigh more than any one of them, and it trotted along the road as cheerfully as a child going home from school. When they carry sugar cane they are loaded until you cannot see either their legs or neck, but only a little head with bright eyes and nodding ears sticking out from under a mountain of foliage. The natives strap a railroad rail to three or four

donkeys and carry heavy timber upon them, using much ingenuity and skill in securing a proper balance, and fastening the load.

But, as a usual thing the "mozos," as the drivers are called, are gentle and kind to their animals and not so abusive as men of other races. They carry a stick and often beat the load, or crack a whip violently if they have one, but you seldom see a donkey beaten.

The horses mostly are tough little bronchos like those of Texas and Colorado, with great endurance and considerable speed. They will travel all day without food and water and the fashion the hackmen have of plunging through the narrow streets is said to be due to the inability of the animals to go slowly. No matter whether you are driving "by the job" or by the hour, the horses are kept constantly at the top of their speed and the rough stone pavements and constant apprehension of collisions or other accidents robs a ride of most of its pleasure.

The saddle horses are superb. They are trained to a gentle amble called the "trote de paseo," which is as comfortable as a cradle and so gentle that an experienced horseman can carry a full glass of water in his hand without spilling a drop. It is said that this "trote de paseo" is natural, that it is inbred in the horses, inherited from animals that were ridden in the early days when it was the fashion of the rider to sit upon a saddle cloth fringed all around with tassels of silver; that the horses did not like to have these ornaments dangling against their legs and took a mincing gait so as to carry them with as little motion as possible.

Horseback riding is common. Nearly every gentleman owns his saddle horse, although I have never seen a lady mounted except when traveling in the interior where there are no roads fit for carriages. As this is the condition of the greater part of the country the people are compelled to take to the saddle.

XXII

THE NITRATE DESERTS OF CHILE

The first port of interest and importance south of Molendo, where the railway to Bolivia terminates, is Arica, which is famous for several reasons. It was here that Hernando Pizarro built the vessels with which the conquistadores scoured the coast and carried the troops for the invasion of Chile. It was a city of importance at the time of the Spanish invasion—of much greater importance than now—and the country back of it was densely populated with aborigines who cultivated tropical fruits and vegetables by means of irrigation. It is supposed to have been founded in the year 1250 by the Inca Tahuar Huacca. The oranges of Arica are famous up and down the coast, and the agricultural part of the territory that lies behind the range of forbidding hills is one of the most beautiful, fertile and prosperous on the coast. Near by, where the waves of the Pacific chase each other over a long, wide beach, is a vast cemetery of prehistoric date filled with the dead of centuries who were embalmed with great skill and care and whose bodies are preserved as perfectly as the mummies of Egypt.

From Arica runs a great highway into the interior of Peru and Bolivia which was constructed by the Incas a thousand years ago and has been constantly used ever since. Caravans of mules, burrows and llamas are constantly passing up and down this ancient trail, carrying inward vast quantities of foreign merchandise and bringing out the products of the mines, forests and the pastures of the interior. This road, known as the "camino real," is about 240 miles long, from Tacna to La Paz.

Near Arica is supposed to be the outlet of Lake Titicaca and Lake Popo, those mysterious bodies of water that lie

between the two ranges of the Andes. Although they drain a large area and receive the waters of many streams, some of which are navigable, these lakes have no visible outlet, but continue at about the same level the whole year around. It is believed that there is an immense subterranean river which passes under the mountains and the desert and finds its outlet in the ocean in the neighborhood of Arica. Scientists find many phenomena which seem to corroborate this opinion.

This theory is confirmed by the fact that the peccajay, a small fish resembling the smelt, which abounds in the fresh waters of the mountains and in the two lakes named, can be caught in large numbers in the ocean near Arica, and nowhere else along the coast. The fishermen often find floating upon the surface of the sea, and among the driftwood on the beach, logs of wood and other vegetation peculiar to the highlands of Bolivia and Peru, but unknown within 150 miles of the coast.

Arica has been the scene of several terrible catastrophes. The town has been destroyed by earthquakes several times, and August 13, 1868, it was almost washed away and nearly all of its inhabitants perished in a tidal wave which came without a warning and devastated the coast for 100 miles or more. Lying in the harbor were the United States men-of-war the *Wateree* and the *Fredonia*, which were on their way to San Francisco. A wave sixty feet high, which came sweeping in from the ocean, lifted them from their moorings and carried them over the roofs of the city about a mile inland. The *Fredonia* was dashed against a ledge of rocks and entirely destroyed, while the *Wateree* was left lying upon a level keel in the sand where she has remained ever since. Every soul on the former vessel was lost, but about half the officers and crew of the *Wateree*, who remained below decks, survived the deluge and escaped when the water receded. For many years the *Wateree* was used as a boarding house for the laborers employed upon the railway, but when that was completed the hulk was abandoned and has since been carried off bit by bit by the people for fuel and building material. All that remains of her now is a skeleton of iron in the midst of a desert about a mile from the beach and two miles or more from the city.

All of the other shipping in the harbor was entirely destroyed and the town was almost wiped out of existence.

On June 7, 1880, during the war between Chile and Peru, Arica was the scene of a furious battle and frightful massacre. At one end of the town is a promontory, with a precipice looking sheer downward 600 feet to the sea and sloping off at a steep grade to the plains behind. Upon this point the Peruvians had erected a powerful battery to defend the harbor, but the Chileans landed a force of 4,000 men through the surf a few miles below and during the night marched them along the beach toward Arica. When the sun rose the Peruvians on the Morro, as it is called, found themselves attacked in the rear, with no means of escape. Their guns, pointing in the opposite direction, were useless, as they had been planted so as to command the harbor only. They were short of small arms and ammunition, but made a desperate defense, and after a hand-to-hand contest that lasted less than an hour the Peruvian force was exterminated. The commander leaped over the precipice into the sea, and his body was crushed to a pulp among the rocks. Several hundred of his soldiers followed him, preferring to die that way than to have their throats cut by the Chileans. More were crowded over the precipice by the advancing enemy at the point of the bayonet, and for months afterward their bodies could be seen lying where they lodged upon the jutting rocks beyond the reach of human hands. It is asserted that 1,700 Peruvians were killed, which was the strength of the garrison, for no prisoners were taken.

Upon the slope of the Morro, as it is approached from the south, and near its summit, where it can be seen for a long distance, is an inscription in whitewashed stones—"Viva Battalion No. 4"—which was placed there by the victors to commemorate the tragedy.

Just south of the Morro is a long, flat desert of shifting sands, in which innumerable bodies are buried. Interred with them are many interesting and curious implements, utensils and other articles of use and adornment, which, according to the theory of the Incas, would be useful to them

in the hereafter. The Incas believed in the immortality of the soul and the influence and activity of disembodied spirits. Hence they buried with the dead their arms and implements, the tools of their trade and the ornaments they wore while living.

Here also are found those curious phenomena known as "mummies' eyes," little hemispherical objects about the size of a seed onion, and made in concave films which fit so closely as to be imperceptible, but can be peeled off by the use of a knife or any sharp instrument. They are translucent and have a deep, rich amber tint, which, when polished, takes on a beautiful luster. But, notwithstanding their beauty, they are useless as jewels, because they are so sensitive to dampness and atmospherical changes, and, being composed of animal matter, cannot endure the climate of the northern zone.

Although the natives believe them to be the natural eyes of the dead, scientists declare that they are the eyes of the squid or cuttle fish, which abound on this coast. It is their theory that in preserving the bodies the Incas removed the natural eye, which is the first part of the human system to decay after death, and, after removing the brains through the cavity, their emblamers substituted the eyes of the cuttlefish in order to give the face of the mummy a lifelike appearance. This, however, is only conjecture.

Some years ago I brought a number of these mummies' eyes to New York and left them with Tiffany to be polished and mounted in gold for a necklace, but the work was abandoned because the men who were employed in polishing them were seized with a mysterious illness, with symptoms of poisoning. A violent irritation appeared in their eyes, lips and nostrils and in some cases affected their throats, supposed to have been caused by dust inhaled from the emery wheels used in the process. Fortunately they all recovered, but the work was not resumed. Portions of the eyes were analyzed and found to be composed of animal matter, with traces of saltpeter and unknown minerals, which were undoubtedly used by the Incas in preserving the dead.

It is a popular delusion that it never rains on the west coast

of South America, but the atmosphere is frequently saturated with a mist that penetrates everything and moistens the soil so as to cause vegetation to grow in sands that seem hopelessly barren. In 1892 heavy rains fell daily on the Peruvian coast for three months and caused great distress among the people, who were not prepared for it. The houses are not built for wet weather. The roofs of the dwellings of the common people are thatched with reeds and palm leaves, which afford no protection whatever and there is not one umbrella to each thousand miles of territory.

The rains were the result of unprecedented phenomena. A strong north wind prevailed all winter and brought the moisture from the damp regions of the isthmus. From some cause unknown the currents of the ocean became reversed also and navigators who have spent their lives on this coast were thrown into consternation. The Humboldt current, which brings a stream of cold water from the antarctic circle that freshens the dry atmosphere and moderates the temperature of the tropics as the gulf stream moderates the cold of the North Atlantic, seemed to disappear for several months and nature indulged in the strangest freak ever known. Finally the regular course of things was resumed, but the cause of the phenomenon has never been explained.

During the rains the desert that lies between the Andes and the ocean was covered with vegetation. Where for ages there had been nothing but drifting sand appeared meadows of nutritious grasses, and flowers and plants, some of them unknown, grew in great abundance, to the amazement of the people. Unfortunately there are few botanists in this part of the country, so that science derived little benefit from the phenomenon, but the vegetables, fruits and flowers were greatly enjoyed by the people. The flower that came in greatest abundance was the poppy. Where the seeds came from nobody knows, but the deserts were fairly ablaze with them. The most prolific vegetables were melons. The vines sprung up out of the sands with amazing rapidity, and when the rain ceased the fruit ripened in the sun and possessed a flavor that is said to have been extraordinary.

The desert narrows as you go southward, the coast line becomes more rugged and bolder and the mountains come down to the sea. They rise like a great wall, 2,000, 3,000, 4,000 and 5,000 feet abruptly from the water. Some of the peaks reach an elevation of 8,000 feet and they are all barren, sandy rocks or hard baked clay, without a vestige of verdure or a living thing. There is an occasional break in the chain, a canyon or *cuedebra*, as they call it here, or a sloping "pampa" that rises gradually instead of abruptly from the coast.

At many of these places ports have been established on the beach for the convenience of commerce, and railways have been built to bring the products of the interior to market. There are a few good harbors, but the most important ports are open and dangerous roadsteads where the surf rolls in with mighty force at all times and often is so violent that neither freight nor passengers can land. It is an extraordinary fact and a commentary upon human selfishness that near by these places are sheltered coves and harbors at which shipping might be economically and conveniently accommodated, but they have not been utilized because the owners of the surrounding property and riparian rights demanded such exorbitant prices, or some real-estate syndicate was interested in another site. About the worst place on the entire coast is Antofagasta. It is not only bad but dangerous, and yet within a few miles to the northward is one of the best and safest harbors on the coast, the bay of Mejillones, which was not made the terminus of the railway to the interior because the people who owned the land where Antofagasta now stands had a "pull" with the engineers.

The word "pampa" conveys to us the idea of a grassy plain covered with dandelions and daisies, browsing cattle, birds and butterflies. That is what they call a pampa in the Argentine Republic and Uruguay, but over on this side of the continent the term is used to describe a high plateau entirely lifeless, with no vegetation, no water, nothing but a burning sun and burning sand, and a heat that fills the atmosphere with vibrations and mirages. It is so hot that you can actually see the heat in the air. Probably the term

was first applied as a joke, but it stuck to the object, and now all these awful deserts are labeled "pampas" on the map. But under the repulsive surface nature has stored untold mineral wealth.

The nitrate ports along the coast look like western mining towns in the United States—wide streets inclosed by long rows of rudely-built one-story houses of Oregon lumber, usually roofed with galvanized iron. Many of them have a piazza on top, or a second roof to break the force of the sun, like the fly of a tent. They are equally uncomfortable and uncouth and the men who live in them have come here to struggle and starve and die in pursuit of that gilded phantom we call wealth. More has been done and dared for gold than for glory or the good of mankind, and the battles that have been fought with fortune on this coast have cost more lives and misery than any war against sin or wrong or in defense of justice and truth and liberty. A few have left this dreadful region millionaires, more with a modest competence, but the great majority have been doomed from the beginning and have fought a forlorn and useless fight, depriving themselves of comforts and enjoyments and cutting themselves off from kindred and home. Whatever they have gained has cost many times as much labor and privation as the same measure of reward in more comfortable climates. Every dollar that has ever been taken out of the nitrate regions by any one has been fully earned.

The streets are dusty and the air is full of sand. It gets into your hair and eyebrows, into your ears and nostrils, you taste it on your tongue and feel its irritation in your throat and lungs. The sun is fierce and unrelenting and its rays, absorbed and reflected by the vast area of desert, keep the air at furnace heat night and day. At nightfall a purple haze falls over the city like a curtain, but is deprived of all artistic association when you find that it is nothing but dust suspended in the atmosphere. There is a surprising number of large shops, filled with an assortment of wares that ought to meet the requirements of all races and ages and tastes. There seems to be, however, an excessive proportion of brandy and

other strong drinks, and we are reminded of the skipper who sent the sailor ashore for supplies and when the latter appeared with one loaf of bread and a dozen bottles of rum, the captain demanded, in an uproarious manner, what in thunder he expected to do with all that bread. The same inquiry suggests itself to my mind whenever I look into the window of a grocery shop in one of these nitrate towns.

Next in abundance is canned stuff—beef, bacon and tongue from Chicago, condensed milk from Switzerland, macaroni from Italy, sardines from Sardinia, anchovies from Sicily, sausages from Germany, asparagus, petit pois and wines from France, jellies and jams from England, cheese from Holland, butter from Denmark, codfish from Norway and Sweden, oil and olives from Spain, tea from China and Japan, coffee from Brazil and Bolivia, caviar from Russia—thus the whole world panders to the appetites of the miners working in the nitrate desert, and they are willing to pay big prices for the gratification. This unnatural climate develops unnatural tastes. A friend tells me of two miners who, being flush, decided to indulge in a feast. They got a loaf of bread and two jars of *pâté de fois gras* for their dinner, a bottle of brandy for their beverage and two cans of condensed milk which they ate raw with spoons for dessert. This extraordinary banquet cost them \$11 each in Chile money.

As nothing is produced but metals in this region, everything to eat and drink and wear has to be brought from more favorable regions. There isn't a thing but sand and rock and the minerals that lie under it for hundreds of miles from this port. Hence there is a very large commerce. All printed goods and plain cottons are of British manufacture, the woollens and other wearing apparel come from Germany, silks and fancy articles from France. Iron and steel in infinite forms come chiefly from England, sugar from Peru and Germany, candles from Holland, rice from China through Hamburg and Liverpool, beef and flour from Chile, the better quality of knives, forks and spoons from England, the cheaper quality, which are more largely sold, from Germany, the bagging used in immense quantities for shipping the nitrate and ores from

Great Britain, the machinery and oils, both lubricating and illuminating, come from the United States, the railway supplies from Belgium and Germany. It is a notable fact that nearly all the contracts for railway construction, bridges and so forth have gone to Belgians or Germans. Drugs and chemicals are mostly imported from England, boots and shoes from France, china, crockery, glassware and stationery from Germany, jewelry from Germany, Switzerland and France. The United States has not a tithe of the trade, for the mercantile business is monopolized by Europeans, who naturally buy their goods at home. The heavy importers and exporters of nitrate and the bankers are mostly Englishmen. Italians keep the groceries and drinking shops, while the Germans are in all branches of trade and more numerous than any other nationality. Occasionally you find an American mine-owner or dentist.

The population is cosmopolitan and represents every race on earth. In some of the towns the foreigners outnumber the natives.

This enormous commerce is conducted under great difficulties. There are no harbors and no docks, but a tremendous surf rolls half way around the world before it finally breaks into foam upon the beaches where these towns lie. Captain Marrow of the steamer *Lautero* says that Australia is their only breakwater. The steamships anchor a mile or so out in deep water and rock with an easy motion as the heavy swells pass under them. The passengers are lowered from the deck into lighters by a steam winch in chairs that are made from barrels, or scramble down a ladder and drop into a boat as the swell lifts it within reach. They are taken through the surf in the lighters with amazing skill by native boatmen, and there is seldom any accident. Captain Harris of the steamer *Guatemala*, who has been sailing up and down this coast for twenty-seven years, says that he never heard of a passenger being drowned or seriously injured. Sometimes a boat overturns through the recklessness of the oarsmen. They may perhaps be drunk or quarreling among themselves, and now and then you hear that one is drowned, but some-

how or another they get their passengers though all right, although the latter occasionally are treated to exciting experiences. Not long ago, at Antofagasta, a tug being carelessly navigated exposed her broadside to the surf and was overturned instantly. As she capsized the boiler exploded and the hulk was blown into fragments. All the five men who composed her crew were lost.

The skill with which the natives handle the big barges is marvelous. There are no tugs to tow the lighters; all the work is done by hand. Two men will skulk a barge carrying sixty or seventy tons of freight over the rough sea from ship to shore and guide it through the surf with ordinary oars without losing a package or shipping a drop of water.

At Salavary, a Peruvian port, the beach is so shelving that the lighters cannot get to the shore, and, after grounding them, their passengers are lifted on the shoulders of the boatmen and carried "pig-a-back" to dry land; or they can have their choice, which is generally exercised by ladies, of climbing on to a chair that is fastened upon a sort of funeral bier and carried by four men. At some of the ports there are long moles extending beyond the surf, but the swell is so heavy that the lighters have to be moored to buoys at a considerable distance to prevent them from being jammed to pieces against the piles. In such cases passengers and freight are hoisted and lowered from and into the lighters in iron cages by a steam winch. Cattle and horses are transferred from the deck of the vessel to the lighters and from the lighters to the dock by a canvas sling which is passed around their bodies and attached to a hoisting chain. Formerly it was the custom to lift cattle by a noose around their horns, and this cruel practice still prevails in some of the ports, but in Chile it is not permitted nowadays. Some years ago the humane society procured the passage of a law by congress prohibiting it under a heavy penalty. Sheep are landed by means of a canvas chute which extends from the deck of the vessel into the lighter. The roustabouts grab the animals by the legs, toss them into it and they slide down in an instant. Freight is hoisted from the hold of the vessel by steam winches

in large nets or spreads of canvas called hammocks, and on shore is handled in a similar manner.

There are plenty of shipping facilities. At every one of the nitrate ports are long rows of big sailing vessels anchored in line like men-of-war, discharging cargoes of merchandise, and taking in cargoes of nitrate, saltpeter, copper, silver, sulphur, borax and various other ores. They bring coal from Cardiff and Australia and from Mobile and Newport News to furnish motive power for the "officinas," as the nitrate works are called, and the railways that connect them with the coast. They are monstrous fellows, mostly four and five masters, built of steel and usually carrying the English, German and Norwegian flags. Sometimes you see the stars and stripes floating from a masthead. It is a rare and welcome sight. The other day at Iquique we saw what was said to be the largest sailing vessel in the world but one. She was a Frenchman, painted gray, with black squares upon her sides like the portholes that used to appear in the frigates that did the sea fighting a century ago. She had six masts and spread several acres of canvas square rigged. She was fitted throughout with electric lights, and steering gear, and her hatches were supplied with steam hoisting machinery which was capable of discharging sixty tons of freight an hour from each one of them. She can carry a cargo of 7,000 tons of wheat or coal or nitrate or anything else that can be packed closely. The freight charges upon these sailing vessels are remarkably low. The Norwegians particularly will bring a cargo of assorted merchandise from Hamburg or coal from Cardiff around the Horn for five shillings a ton, a rate less than a Chicago truckman would charge to haul it from a railway station to a warehouse.

There are several lines of steamers running regularly and no end of tramps looking for charters. Two lines give monthly sailings between the nitrate ports and New York, one under the management of W. R. Grace & Co., and the other under Flint, Eddy & Co.

There is no fresh water at any of the nitrate towns. The entire supply for human consumption and for the reduction works must be brought a long distance. Formerly a fleet of

small sailing vessels was employed to bring it in casks from the "wet ports" up and down the coast, and in times of scarcity it has sold as high as \$2 a gallon. Frequently the price has run up to forty and fifty cents, but the average rate in the old days was about ten cents a gallon. The boats would load at Arica on the north and distribute their water from port to port until they reached Coquimbo, where they would refill their casks and sail back.

Then condensers were introduced, sea water was pumped up and distilled. This was an expensive process, but a better quality of water was obtained and the salt that was extracted was a valuable by-product. All the salt used in Chile and Peru is dug out of the ground like coal. There are several basins along the coast where salt lakes have formerly been. The water has evaporated and has left solid masses of translucent crystals, which are cut out with saws and sent to market in blocks like ice.

Within a few years, as the nitrate business has grown in importance, companies have been formed to lay pipe lines from the mountains to several ports along the coast. The line which supplies Antofagasta is 185 miles long, that for Iquique is 148, that for Taltal is 102 miles, and those that supply other ports are of similar length. These conduits are made of ten and twelve inch iron pipe, and often lie upon the surface of the desert; at no place are they buried more than two or three feet deep. That for Antofagasta follows the railroad track, and was built by the railway company to supply its tanks as well as the city. Some of these pipe lines cost millions of dollars, but they have been found profitable investments. It costs little or nothing to keep them in repair, and the supply of water is so abundant that it can be distributed around the city in underground pipes and among the mines and oficinas, as the nitrate reduction works are called. The streets are piped, hydrants are provided as a protection against fire, the dust in the business streets is laid by sprinklers, bathrooms with running water are now found in the houses and fountains in the patios of the rich, but these are expensive luxuries. Water used to be sold like beer and wine in pint and quart bottles,

when bathing outside of the sea was too expensive for ordinary people to indulge in, but it is now sold by the foot and measured by meters.

The late Colonel North of London, "the nitrate king," laid the foundation of his enormous fortune by peddling water in the streets of Iquique and Pisagua. While gossiping one day with Mr. Speedie, one of North's chums in early days and one of the oldest residents on this coast, I learned some interesting facts concerning this famous Englishman.

North was a boilermaker at Leeds, and when a mere boy was brought out to Chile by a Captain Petrie. He was diligent at his trade and saving with his money. One day he conceived the idea of buying an old hulk that lay in the harbor and going into the water business. Petrie advanced him money. He repaired the vessel with his own hands, divided the hold into tanks, rigged pumps that would fill and empty them rapidly, and when his novel craft was afloat she drove the sailboats out of the business and paid for herself every month. North used to say that in all his speculations he had never known or heard of a business that paid a bigger profit. Mrs. North was a sort of general manager for the distribution business, took orders for water and collected the bills. There is a story that she used to peddle water in a donkey cart in the streets of Iquique, but that is a myth. She employed agents who drove tank carts from house to house and filled buckets and bottles as they were brought out to them in the same way and for about the same price that milk is sold in our cities.

North had a good head for business, untiring energy and a native shrewdness in trading which Scotchmen and Yankees are supposed to possess in a high degree of development. He made money in many ways. He bought and sold old iron, picked up engines and machinery that had been discarded, repaired them and sold them sometimes to their original owners. He took contracts for almost everything in the building line. In the midst of this career there was a terrific fire at Iquique which swept away two-thirds of the town. The telegraph line was destroyed, and all means of communication were cut off, but North had two tank steamers in the harbor.

He boarded one, and one of his clerks boarded the other, and they started north and south, stopping at every town en route and buying up all the lumber, hardware, bricks, carpenters' tools and other building material on the coast, which was shipped to Iquique as rapidly as possible and sold at enormous prices.

North came out of this speculation a rich man, with a large cash balance in the bank, and began to invade other fields of enterprise. He organized companies to build condensing works for a water supply and reduction plants for nitrate. At this time the nitrate district belonged to Peru. It was stolen by Chile during the war of 1881. The demand from Europe was rapidly increasing as the farmers learned of its value as a fertilizer, and, appreciating the possible importance of the product, President Pardo of Peru, declared the export of nitrate a government monopoly and endeavored to buy up all the private claims. North got early information concerning this intention, secured options upon as many mines as possible, and sold them to the government at a large advance. Pardo's scheme fell through owing to a lack of funds to handle it, whereupon North took from the hands of the government all the mines that had been purchased, consolidated them under a single management, and became "the nitrate king." He formed associations, trusts and other combinations, secured exclusive concessions from the government, and at the time of his death, a few years ago, lived in a \$2,000,000 palace in London and controlled the trade.

Chile owns practically all the nitrate of soda in the world. Small quantities are found elsewhere and have been used for years for the manufacture of gunpowder and other chemicals. But on this coast only are deposits of sufficient importance to pay the expense of mining, and here the unlimited supply and the enormous output is beginning to make the business unprofitable. If all the oficinas were run to their full capacity they would make double the amount required for the consumption of the world. One would think that under these circumstances, with all the mines within the limit of a few days' journey, and the general tendency to consolidation, that a combination

would have been formed long ago to control the output and regulate prices; but so many nationalities are represented and so great are the jealousies in the trade that it has been impossible to get producers to combine, and owing to overproduction the price has gradually fallen from \$1.56 per hundred weight at the time of Colonel North's death in 1894 to \$1.12 per hundred weight, and is still going off every year.

Under the sand of this desert, which drifts before the wind like snow, nature by some mysterious process has laid a bed which resembles the crust that often forms on the top of snow when the days are warm and the nights are cold in winter. No one knows how it was formed, and while its extent has not been measured the official surveyors declare that there is enough to supply the whole world for 1,000 years. The substance usually analyzes about as follows:

	Per cent.
Nitrate of soda	0.65
Chloride of soda23
Iodine06
Sulphate03
Earth and sand03
Total	1.00

This source of wealth—greater than any nation ever before enjoyed—was discovered in the early part of the century, but was supposed to be useless. After a few years small quantities were shipped to Europe for chemical purposes and the manufacture of gunpowder. The ammunition used by the patriots of Peru and Chile during the war for independence in 1824 was made from nitrate found in this vicinity, but no one dreamed of its value as an article of commerce until George Smith, a forlorn Scotchman who was living on his wits in the village of Pica, near where the city of Iquique now stands, discovered that it was a good fertilizer. Smith was fond of flowers and fruit, and had a little garden which he cultivated with great care. One day he noticed that the trees and plants that were banked up with soil that contained traces of this mysterious white substance flourished more than the others. This led to experiments, and the results were explained to John T.

Martin, a brother-in-law of Smith's, who had come out on a visit from Aberdeen. Martin was in the canned fruit and vegetable line, and when he went home took a few bags of the white stuff for the farmers from whom he bought his stuff to try in their orchards. Thus was the first nitrate sent to Europe to revive the worn-out land. Gibbs & Co., a business firm in Valparaiso, were the first to go into the business of export and became millionaires. Smith died as poor as he was born, and Martin vanished into oblivion.

It was soon found, however, that nitrate in the raw state contained properties that were injurious to some plants, and reduction works were established to extract the deleterious substances, which when treated chemically were found much more valuable than nitrate itself.

The stuff is found on what they call the pampas—rolling deserts of sand and rock, entirely lifeless and elevated from 4,000 to 5,000 feet above the sea. The sand is first shoveled off and then a crust of clay is removed. This discloses a bed of white material that is as soft as cheese. The stratum is often four or five feet thick, and will average two or three feet. It is broken up by crowbars, shoveled into cars and taken to the "officinas," where it is crushed to powder. It is then lifted by elevators into great vats, where it is dissolved in boiling sea water. The solution is run off into shallow iron vats, which when exposed to the dry air and the fierce heat of the sun rapidly evaporates. After a certain period of exposure the liquid is drawn off and the bottoms and sides of the pans are covered with white, sparkling crystals like alabaster. This is saltpeter, and it is shoveled upon drying boards, where it is exposed to the sun for awhile, then graded according to the quality and put into bags weighing a quintal, or about 100 pounds, for shipment. The highest grade goes to the powder mills, the second grade to the chemical works, and the remainder, the great bulk, goes to fertilize the exhausted soils of Europe.

The yellow liquor that is drawn off is more valuable than the crystals it leaves in the pans, and is conducted by pipes to a crucible, where it is chemically treated and then poured into

smaller pans, where it is allowed to cool and remain for a certain length of time, when the bottoms of these pans will be found coated with a beautiful blue crystal, which is the iodine of commerce and costs as much per ounce as the saltpeter per hundredweight. The iodine is packed in little casks and covered with green hides, which shrink with drying until they are as tight as a drumhead and keep out the moisture. When these casks are shipped they are stored in the treasure vaults of the steamer with bullion and other valuable packages, for a single cask is worth \$700 or \$800.

The shipments of nitrate are enormous, and in 1898 reached a total of 28,468,049 quintals, or packages of a hundredweight each, or nearly 3,000,000,000 pounds, value \$90,675,297. This was an increase of 4,427,270 quintals or hundredweight, over 1897. In 1877 the total was less than 5,000,000, and for several years previous it averaged about 2,000,000 a year. This year (1899) the exports will reach 30,000,000 quintals.

Great Britain takes about one-third of the entire product, or 10,000,000 quintals: Germany, one-fifth, or 6,000,000; the United States and France each consume about 2,500,000 annually; Holland, Belgium and Italy, about 1,250,000, and the remainder is divided among twenty other nations which last year took more or less.

Iquique has the largest trade. It is a town of about 35,000 inhabitants. Its most prominent citizen is an American named George B. Chase, an old resident, who found an abandoned copper mine and has worked it with great profit until he has piled up several millions of dollars. Meantime he has been fighting a perpetual lawsuit in the courts with the Mackenna family, who claim the ownership of the property.

The shipments of saltpeter from Iquique in 1899 were valued at \$59,051,624, and those of iodine at \$2,712,690. Pisagua is the second port, and its shipments last year were valued at about \$15,000,000.

Antofagasta resembles Iquique, but owes its importance to silver and copper mining instead of nitrate. It is the terminus of a railway to the interior of Bolivia which brings down enormous quantities of ore and bullion, particularly from the

Huanchaca mine of Bolivia, which is said to be the most extensive silver mine at present in the world. It belongs to ex-President Arce of Bolivia, and its ore is so rich that it has been able to compete with Mexico and the United States even during the long silver depression.

Owing to the advance in the value of copper, a great deal of attention has recently been directed to vast deposits of that metal which are known to exist in Chile, and particularly along this coast. Abandoned mines have been reopened, those which were flooded have been pumped out, many new and important prospects have been discovered and taken up by both foreign and native capitalists, and there has been a rush to buy properties in which both foreign and local syndicates have joined. Ore that will pay \$300 a ton can be shipped to Europe with great profit. Ore that pays less is smelted here and converted into what they call "regulus," which is unrefined copper.

The great trouble, however, is the lack of labor. Thousands of men who are willing to handle a pick and shovel could find employment in the mines at large wages, but it is a terrible life, and anybody who knows anything about mining can do much better working on his own account and selling his ore than by putting his name upon the pay roll of a company.

Behind Antofagasta are several active volcanoes, which constantly emit sulphurous vapors that can be seen at a great distance. One of them, Antofalla, measures 19,500 feet, and Lastarria is a little higher. An American syndicate is working an immense deposit of pure native sulphur in the forest range of the Andes, and there are hot springs of vile brackish water every few miles. In comparison with this awful desert Sahara is a botanical garden, but people claim that Antofagasta is very healthy if you don't starve to death or die of thirst.

XXIII

THE CITY OF VALPARAISO

Valparaiso is a queer sort of a city, and lies around the narrow rim of a bay which describes a semi-circle. Behind it are nineteen separate hills and mountains, from 300 to 1,100 feet in height. The space between the bay and the foot of the mountains is very narrow. At one place it is wide enough for only two streets. At other places the gaps between the hills enable the city to creep back a considerable distance, but nowhere is the distance between the base of the mountains and the bay more than half a mile. The length of the city is something over four miles and the curve is almost the arc of a perfect circle.

The bay opens to the north, a wide area without any protection whatever, and when "northers" come the water from the ocean is blown into the bay and the surf dashes over the Malecon, as the sea wall and esplanade are called. There are no docks or wharves, but the whole frontage of the bay is utilized instead. Steam cranes have been erected at different intervals, which lift packages of freight from large launches and lighters that are towed to and from the ships anchored a mile or two away. It is an awkward and expensive way of handling commerce, but the only way that ordinary docks could be protected would be to build a breakwater across the mouth of the bay, which is several miles in width and sixty or seventy fathoms deep. There are several projects for such an improvement, but they involve so great a cost that the people are frightened whenever they are talked about.

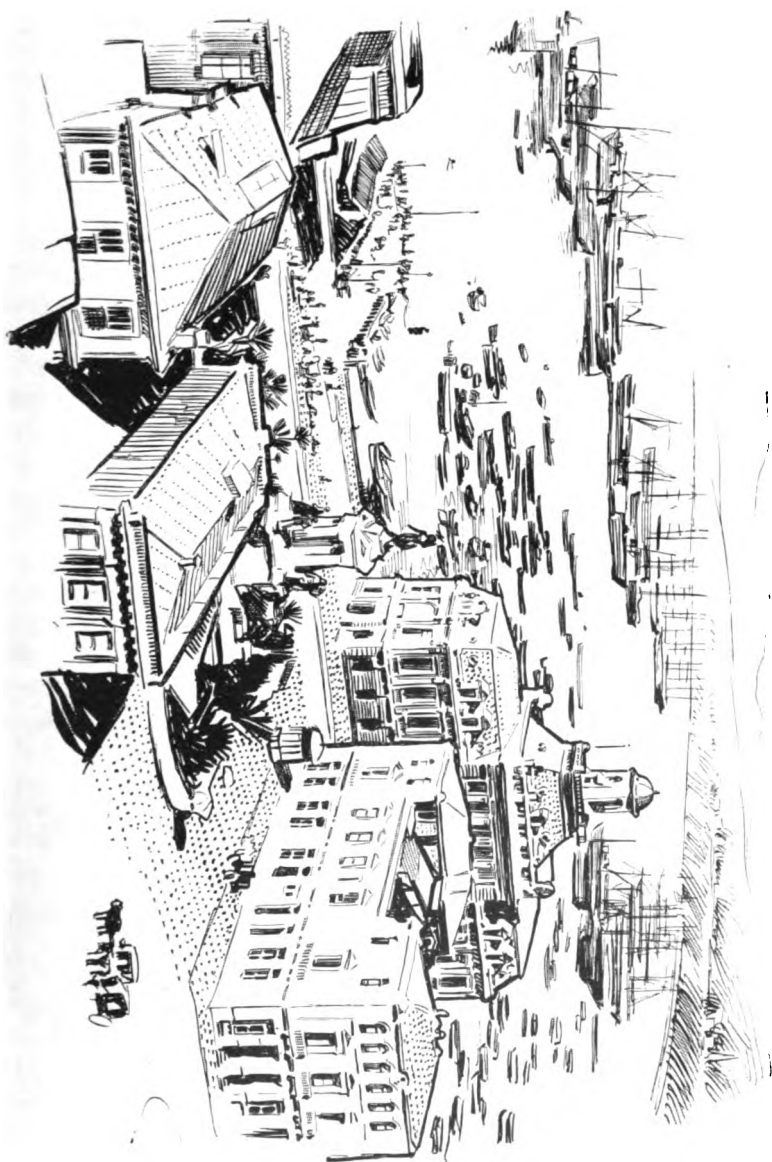
Although "northers" are expected every now and then during the winter season, and more or less damage is always done, there were never so many or so fierce storms as were experienced in August, 1899. For several days in succession

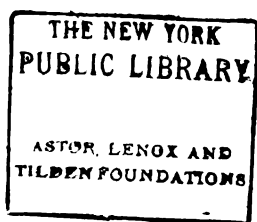
huge waves rushed over the sea wall and dashed against the doors of the houses on the other side of the esplanade. Their force was so great as to destroy heavy masonry in several places, tear up the pavement of Belgian blocks, carry off the railway tracks that lay in the middle of the street, with loaded cars that stood on the switches, and even undermine the foundations of the houses so that several of them had to come down.

At the same time the heavy rainfall upon the nineteen hills came in torrents and even cascades down the streets and alleys from the other direction. The sewers, which are usually made of ten or twelve inch pipes, were soon filled up with sand and earth and forced the water to the surface. In this way greater damage was done than by the sea. Several houses were washed out, and several lives were lost, while the narrow streets of the city were filled with earth and water to a depth of five or six feet, which did not subside for several days, during which time the inhabitants were compelled to live in the upper stories of their houses and go about in boats, and suffered serious losses by the destruction of their furniture and household goods and the stock of merchandise in their stores, and by the injury done to the floors and walls of their buildings. This experience was repeated several times during the winter after the first flood had filled the sewers with sand.

The great artery of commerce, Victoria Street, follows the coast line for the entire length of the city, and is fronted by the banks and hotels, the retail shops, the government buildings and many fine private residences. The business portion of Valparaiso shows some good architecture, more elaborate and expensive than can be seen anywhere on the Pacific coast south of San Francisco. The shops and stores are large, and contain as complete an assortment of goods as can be found in any city of the world. There is no place in the United States of a similar population with such a display of costly and luxurious articles. The people are wealthy and prosperous, the foreign element is large and accustomed to the best things that money can buy, and Valparaiso has always been famous for the extravagance of its citizens. Some of the private resi-

The Harbor of Valparaiso.





dences are palatial in their proportions; there are clubs as fine as the average in Europe or America, lovely parks, public reading rooms, libraries, picture galleries and all the elements that go to make up modern civilization. The opera house, which is owned by the municipality, surpasses in size and beauty any that can be found in the United States outside of Chicago and New York, and for thirty nights each winter Italian grand opera is presented by the same company that occupies the opera house at Milan, Italy, during the winter months of the year. The city gives a subsidy of \$40,000 as an inducement to the manager to bring his singers and orchestra, and no rent is charged for the building.

There are several fine monuments, and one of them was erected in honor of William Wheelwright, an American, who established steam communication on this coast and built the first railway in South America. There is a statue of Columbus and another of Admiral Cochrane, the Englishman who commanded the revolutionary fleet in the war for independence; but the most imposing monument and one of the finest in America was recently erected in honor of Arturo Prat, one of the heroes of the war with Peru. There is also a monument in honor of three young men of Valparaiso, members of a volunteer fire company, who lost their lives in trying to rescue some women from a burning building some years ago. The city is strongly fortified and the most conspicuous building upon the hills around it is a naval academy, where 200 or 300 young men are studying the arts of war and navigation.

Valparaiso is a cosmopolitan city, and the foreign population is nearly equal to the number of the natives. The Germans are most numerous, and, as in other cities on this coast, have the largest share of the retail trade. The Italians, Spaniards, French and English come next in order, with a few citizens of the United States. Very few cities of the same population can compare with Valparaiso in the volume of business transacted and the amount of its foreign commerce. During 1898, 914 steamships entered this port to discharge cargo, an average of seventy-six a month, and 194 sailing vessels.

The climate is delightful. The temperature seldom exceeds

80 degrees in midsummer, and never drops to the freezing point. There are occasional earthquakes, and during 1896 there were thirty-five shocks of considerable violence, which did some damage, but no lives have been lost from that cause for more than a century.

An evening view of Valparaiso from a steamer in the bay is quite startling, as the terraces of light, one above the other, to the height of 400 or 500 feet, give the appearance of a city turned up on end. Electric lamps are abundant, and large arc lights are placed at frequent intervals upon the crests of the cliffs with reflectors that throw their rays over into the streets and upon the terraces with the effect of moonlight. Standing upon the balconies that project from the residences on the hillsides the scene in the bay at night and the brilliant illumination of the semicircular city that surrounds it is as brilliant as fairyland.

Valparaiso is the second city of Chile and next to San Francisco the most important port on the Pacific coast of America. The name means "vale of paradise," and is so incongruous in several respects as to provoke sarcasm, but the true origin was as follows: In 1536 a Spanish captain named Saavadra was sent by Diego de Almagro, Pizarro's partner, to take possession of an Indian village called Quintal, which stood here at that time, and his loyalty to his native place, Valparaiso, a town of Castile, prompted him to christen the city he founded in its honor.

Nature never intended that a city of 125,000 inhabitants should be located here. The inhabitants have shown a good deal of ingenuity and patience in overcoming the natural difficulties, and have covered the almost perpendicular and rocky escarpments that surround the bay with houses. Indeed, the most agreeable and fashionable residence quarter is on the cliffs, which are reached by winding roads and lifts such as one sees in Cincinnati and Pittsburg. On the edges of the cliffs the poorer classes have built rude dwellings of old timber and all sorts of débris, patched up with sheets of corrugated iron, and some of them, perched upon almost inaccessible rocks and propped up with ungainly wooden supports, present an appear-

ance of peril and inconvenience. During the storms several were washed away, although they did not suffer so much as one would expect.

William Wheelwright, of Camden, N. J., built the first railway in South America, from Caldera to Copiapo, in 1849. Allan Campbell, who recently died in New York, was his chief engineer. In 1846 they surveyed a line between Valparaiso and Santiago, and it was partially built and in operation under the management of Samuel Warde Greene, of Rhode Island, in 1855. Henry Meigs, the California fugitive, completed it in 1863, and gave the Chileans a conspicuous illustration of American enterprise. The government made a contract with him under which it was stipulated that the road should be ready for traffic in three years. He was to receive a bonus of \$10,000 a month for all the time anticipated, and pay a forfeit of the same amount for every month's delay. He finished the job in two years and had 10,000 men at work under sixty-two American engineers and contractors.

Among them was John L. Thorndike, who left a position on the Detroit & Milwaukee Railroad to go with Meigs to Peru. He built the railway to Bolivia, which he managed for many years, until it was turned over to the Peruvian corporation, which now controls all the railroads in that republic. Mr. Thorndike is still living in Lima, the most prominent member of the American colony, enjoying a well-earned fortune and reputation. He was the successor of Henry Meigs in Peruvian enterprises. Mr. Edward C. Du Bois, who is also living in Lima and occupies the old Meigs mansion, which is the finest in the country, was also engaged upon the Valparaiso & Santiago Railroad for several years, and one of his associates was Thomas Braniff, who afterward went to Mexico and built railways and engaged in other enterprises there. He has the reputation of being the richest man in that republic. Charles F. Hillman, who is still living in Santiago; Charles Green, his brother-in-law, who is United States consul at Antofagasta, were also members of the party. Hillman built the street-car system of Santiago, and carried out other important enterprises.

Among other Americans who introduced modern improvements into Chile were "Big Ben" Bates and Ben Carman, who was familiarly known as "the sunny boy," because of his disposition; "Dad" Pierce, from the State of Maine, and his three sons, Peleg, Waldo and Charles, who were contractors; Henry Meigs Keith, of Brooklyn, a nephew of Meigs; James B. Cilley, of New Hampshire, who assisted Meigs in the construction of Oroya road in Peru, and was for many years its manager, until his death; George B. Maynadier, of Maryland; Walter W. Evans; John R. Bernard, who committed suicide while afflicted with softening of the brain; Charles Downes, who served for forty years on the government railways here, and is now retired on a pension; Charles Hill, who is said to be living on Long Island, and John R. Gillis, a son of a commodore in our navy, who returned to the States and built railways in the Rocky Mountains.

Mr. Wheelwright went to the Argentine Republic as an apostle of enterprise, and built railways there, and founded the Pacific Steam Navigation Company, which built up the commerce of England along the coast and is to extend its service to San Francisco.

There will be a considerable increase of trade, I hope, when direct steam communication is established, but it will be necessary for American merchants to come down here, establish agencies and introduce their goods in order to secure a share of the trade, because the commercial habits of the country are firmly fixed, and it will be impossible to divert them without a strong and patient effort. There is no reason why nearly all the foreign merchandise needed in Chile cannot be sent on a through bill of lading from Chicago to Valparaiso and other ports on this coast by way of Los Angeles, San Diego or San Francisco. The distance is shorter than to Liverpool or Hamburg, and the steamship companies will certainly make as good rates as to those ports.

The United States has never had a large trade in Chile. Our imports from that country consist mostly of nitrate of soda and other minerals, hides and wool, and average \$3,750,-

ooo a year. In 1896 the total was \$1,000,000 more. In 1891 the total was \$3,448,290; in 1898 is was \$3,736,307.

Our exports to Chile have varied from \$2,000,000 to \$3,000,000 a year, and have nearly all been carried as ballast by sailing vessels which go down for nitrate or by the steamers that are sent monthly by Grace & Co., of New York, with their own stock. In 1888 the total was \$3,145,000. In 1898 it had fallen to \$2,351,727.

In order to give you an idea of the class of goods which we are sending to Chile, I find in the statistics of her imports from the United States that the largest item is cotton fabrics, amounting to \$1,171,484, or nearly half of the whole. The other chief items were:

Breadstuffs	\$341,976
Oils	178,086
Manufactures of wood	122,498
Agricultural machinery	79,608
Preserved fish	50,403
Clocks and watches	46,598
Drugs and patent medicines	82,339
Cordage and twine	34,886
Naval stores	43,638
Paper	36,154
Provisions	45,587
Plated ware	11,318
Soap and soap stocks	32,859
Telephone and telegraph supplies	25,054
Iron and steel	43,979
Nails and tacks	44,159
Pipes and fittings	22,149
Cutlery and saws	7,869
Firearms	18,452
Builders' hardware	28,775
Scales and balances	13,301
Tools	18,683
Stoves, ranges, etc.	9,343
Electrical machinery	16,298
Metal-working machinery	8,627
Printing presses	2,178
Pumps and pumping machinery	2,834
Sewing machines	7,663
Shoe machinery	1,950

Locomotive parts	8,033
Boilers and engines	17,665
Typewriters	6,735
All other machinery	52,088
Lamps	3,927
Type	7,619
Leather goods	7,709
Paints	2,363
Perfumery	6,947
Photographic materials	6,141
Stationery	10,722
Tobacco	5,832
Dental supplies	6,753
Varnish	2,523
Shoe blacking	2,356
Books	14,043
Bicycles	14,206
Carriages	10,044

The people of Chile are large buyers and consume an immense amount of imported goods, on an average of about \$70,000,000 a year in gold. In 1898 the total imports were \$168,069,431 in the local currency, which was worth about 40 or 42 cents in gold. The imports consisted chiefly of wearing apparel and household goods, machinery and the luxuries of life. The largest items were refined petroleum, \$2,029,622; wire, \$782,577; live stock, \$4,349,934; rice; \$1,048,214; drugs, \$1,348,459; flannel goods, \$1,449,220; other woollen goods, \$1,556,635; white cotton goods, \$2,485,088; cotton prints, \$2,195,335; cotton sacking, \$760,146; other kinds of cotton goods, \$3,789,675; agricultural machinery, \$1,220,771; other machinery, \$1,484,440; bags for nitrate, \$2,966,419; tea, \$1,347,106; candles, \$1,457,808.

The largest share of the trade goes to England. The total amount of imports from that country from 1844 to 1898 reached \$775,767,011, while that from Germany during the same period reached only \$325,316,965; but the Germans are creeping up very rapidly upon Great Britain, which is due to cheap freights and the establishment of German mercantile houses in this country. The United States stands fourth in the list of imports, the total for fifty-four years being \$139,080,599.

The exports of Chile in 1898 amounted to \$168,069,431, of which 75 per cent were the products of her mines, nitrates, copper and silver; 8 per cent products of agriculture and 4 per cent of live stock. Great Britain took the bulk of her exports, a total of \$111,324,574; Germany came second with \$24,583,031; France, \$11,314,685.

Chile is passing through a financial depression. It is the old story of governmental and individual extravagance, speculation and bad management. Both the government and the people have been living beyond their incomes and have borrowed money to meet the deficit; then, as the time approached for a settlement, they attempted to postpone the crisis, and, after securing a temporary grace, demanded the right to pay their debts in a currency less valuable than that they had borrowed. The situation, so far as the parties to the controversy are concerned, is the exact reverse of that which we experienced in the United States. The rich people want paper money. The poor people demand gold. The capitalists, the big planters, the manufacturers, the miners and the bankers are calling for an increase in the paper currency on the ground that the volume now outstanding is not sufficient for the commercial requirements of the country. This may be true, but it is due to the fact that the abundance of paper has driven the gold and silver out of circulation and caused those who are so fortunate as to possess coin to hide it in stockings and old teapots, or put it in their tin boxes in the safe-deposit vaults. The last of \$65,000,000 in gold coin disappeared from circulation within twenty-four hours after a law for the issue of \$50,000,00 of paper notes had been signed, and for a few days there was no money in the country. Street car tickets, postage stamps, memoranda written in pencil on the backs of cards and old envelopes, "I. O. U.s" in every conceivable form, were passed around in lieu of currency until the minister of finance relieved the situation by disbursing a lot of printed notes that had been obsolete for years, but were lying in one of the vaults of the treasury, covered with dust. This was surcharged with a rubber stamp and used temporarily, until the printing office could supply the notes authorized

by the new law. Some of it is still in circulation. By the railways, which are owned by the government, credit was extended to those who were known to the ticket sellers and freight agents. This was absolutely necessary, because there was no coin or other currency with which the people could pay.

The paper money in circulation was worth about 30 cents on the dollar—you could get \$3.30 for a United States green-back, \$16 for a pound sterling—and the debtor class wanted to settle their obligations in that instead of the gold coin that they borrowed some years ago. The creditor class protested, and was supported by the laboring population, who resisted every measure that tended to lessen the value of their earnings, because the cost of living has remained the same, while the purchasing power of their wages has been reduced in a considerable degree. The following comparison will show the change which took place in the incomes of wage-earners of this country within thirty days after the issue of paper money as above described, and the difference is much greater to-day:

	Value in Gold	
	June 1, '98	July 1, '98.
Wages of ordinary laborers	\$0.50	\$0.34
Masons67	.47
Carpenters	1.33	.93
Gasfitters	1.33	.93
Painters	1.00	.70
Engineers	1.50	1.00
Firemen75	.50

There has been a corresponding reduction in the purchasing power of the incomes of the entire population.

The recent financial history of Chile contains many events of interest. In 1895 the congress passed an act providing for the resumption of specie payments and the establishment of a gold standard of value. At that time the circulation outstanding consisted of \$18,000,000 in government notes, \$5,000,000 in silver, and \$20,000,000 in bank notes. The law provided that the government should redeem both its own and the notes of the banks in gold coin, dollar for dollar, upon presentation, and it was provided also that the banks should redeem their own notes from the government in monthly installments. If

for any reason they failed to do so they were to pay interest at the rate of 6 per cent per annum upon all deferred redemptions. To secure sufficient gold to carry out this law a loan of \$10,000,000 was secured in London and the proceeds of the sales of nitrate deposits were also set aside for that purpose.

The first effect of this law was to confirm public confidence and increase the value of the paper money, but the banks took advantage of the indulgence allowed them by the law to impose upon the government and were allowed to do so because of the amiability of the financial authorities. They would send their own notes to the treasury for redemption and receive gold for them. The notes would be destroyed and the transaction would stand simply as a loan of gold by the government to the banks at 6 per cent interest, running an indefinite time at the discretion of the minister of finance. In the meantime the banks would loan the gold to their customers at a higher rate of interest, often 10 and 12 per cent, and thus make a handsome profit which they were loath to lose. This continued until the government treasury had been drained of gold and had nothing to show for it except the accounts of the banks. The natural influence of such a lax financial policy on the part of the government was to demoralize private transactions, but more serious was the effect upon the Bank of Chile, which is a government institution, like the Bank of England, and which, being drained of its coin, was allowed to continue its existence upon the national credit. When the banks were called upon to make good the gold that was advanced for the redemption of their notes they could not refund because their customers were unable to repay their loans.

At the very height of this folly came a war scare. The controversy between Chile and the Argentine Republic over the boundary line grew so acute that both governments, although bound to submit the question to arbitration, began to make active preparations for hostilities upon a scale entirely out of proportion to their wealth, population and resources. Chile expended something like \$20,000,000 in gold in the purchase of military and naval supplies in Europe, and, although the government had borrowed \$10,000,000 in England to

redeem its paper currency, for every gold dollar brought into the country under that loan two gold dollars were sent back to pay for ships, arms, ammunition and other supplies. Chile ranks twenty-third among the civilized nations of the world in population, but within three years she brought up her navy to the eighth place, and her army in numerical strength and equipment was made equal to that of the United States before the war with Spain.

After the enactment of the resumption law \$67,000,000 in gold was coined, and on the first of June, 1898, it is estimated that \$45,000,000 was in active circulation in that country, but when the crisis came, on June 18, 1898, and congress was informed that there was an available cash balance of only \$30,000 in the Bank of Chile, the public became frightened, there was a general panic and a run on all the banks which would have exhausted their deposits immediately had not the government granted permission to all the banks in the country to close their doors for five days. During this interval congress passed an act called the moratoria, or "license of debtors," the effect of which was the suspension of all payments and actions at law for debt for thirty days, without prejudice to the debtor. After the passage of this act the banks resumed business, but exercised a discretion in cashing such checks and in paying their depositors only such sums as in the judgment of the bankers would relieve actual necessities. The immediate effect of this extraordinary policy was to close all manufacturing establishments and suspend the pay rolls of all large employers. Almost the entire working population of the country found themselves thrown out of employment and their incomes stopped without any immediate prospects of relief.

The mechanics, the small tradesmen and the wage-earners of Santiago held public meetings, and at the capital an army of 6,000 workmen marched to the palace of the president and submitted a petition demanding an early solution of the crisis, "as by next week the whole working population of the country will be without food." The president replied that he regretted their situation, and sympathized with their condition, but was unable to relieve it, and advised them to apply to con-

gress. Acting upon this suggestion, the immense throng surrounded the house of congress and through a committee demanded the immediate enactment of legislation necessary to relieve the situation.

In fear of violence congress passed a bill authorizing the issue of \$50,000,000 in paper money, which gave temporary relief, but the immediate result was, as I have stated, the absolute disappearance of every gold and silver coin in circulation. Thus, instead of increasing the currency, there was an actual contraction. Not less than \$45,000,000 of coin was withdrawn by those who were so fortunate as to hold it, and \$50,000,000 of paper, having an actual value of only about \$35,000,000, was substituted, and it has since depreciated still more.

XXIV

SANTIAGO, THE CAPITAL OF CHILE

It is a journey of five hours from Valparaiso to Santiago over a railway built by American engineers and contractors about fifty years ago, which now belongs to the government and is operated at a loss for political reasons. Those who believe in government ownership of railways may find an instructive object lesson in Chile. Wages are higher and the number of employés for the same service is much larger upon the government roads than upon private roads of the same mileage. The discipline is less severe, accidents are more frequent, and the cost of maintenance is considerably larger. The employés upon government roads work a limited number of hours, and are given greater privileges. They obtain and retain their positions more through political pull than efficiency. On the other hand, a large number of people who could not possibly secure employment from private corporations find it easy to get good places and good wages from the government, and the general welfare is promoted at the same time by low rates of transportation.

I do not know any country where the luxuries of railway travel are so cheap as in Chile. You can ride 125 miles from Valparaiso to Santiago, for example, for \$2.70 gold, and by paying 30 cents extra can have a reserve seat in a Pullman car. But there is no allowance for baggage. You have to pay 3 cents a pound for every package that goes into the baggage car, and they will not allow you to take trunks or large parcels into the passenger cars. Economical travelers evade this regulation by arranging their belongings in several small packages and valises instead of a single large one. Similar rates are charged on the other lines that belong to the government. On those owned by private corporations the tariff is

much higher, but they are run for profit and not as political machines.

Chile has the only Pullman cars on the west coast of South America. Although they are still very comfortable and a great improvement upon the ordinary coaches, they are of the old fashion, the pattern of twenty years ago, and look quite antiquated in comparison with the modern sleepers and parlor cars we see in the United States. The Pullmans are well patronized, for the people are fond of luxury and comfort. The entire rolling stock of the road is rather antiquated, of the American pattern, and needs painting and repairs. The same complaint will apply to all of the government roads. They are not kept up. The managers know that they are losing money, and naturally want to keep the deficit down as low as possible for their own credit. They therefore spend very little for new rolling stock and repairs.

The railway stations at Valparaiso and Santiago are splendid structures of imposing architecture, well adapted for their purpose, and are much superior to those usually found in cities of similar size in the United States. The employés of the passenger trains and at the stations are courteous and attentive, the eating houses are well kept and served, the scenery is picturesque, and altogether the journey is enjoyable.

The first stop of importance is in Vin del Mar, the aristocratic suburb of Valparaiso, where the rich have summer residences, and there is a fine big hotel for the accommodation of people who are not so fortunate. Sea bathing, fishing, delightful drives, a race course, tennis courts, golf links, polo grounds and other appurtenances for pleasure and pastime are abundant and are thoroughly enjoyable. Sunday is a gala day at Vin del Mar. The people of Chile have passed the bull-fight period in civilization, but have horse races every Sunday afternoon, which are attended by everybody. The residents entertain house parties of friends from town, and the hotels are filled with city people who come early and go back late.

Farther up the valley which the railroad follows is some splendid scenery, including an extended view of Aconcagua, which is claimed to be the highest mountain in America, and

lifts its peak nearly 25,000 feet above the sea. Sir Martin Conway, the Alpine climber of England, found that Illampu and Sorata in Bolivia were higher, or at least that was the story he gave out at La Paz when he returned from his ascent, but after he got to Chile he appears to have revised his reports and reduced their elevation about 2,000 feet.

Aconcagua is not so picturesque a peak as those you see in Ecuador and Bolivia, and notwithstanding its great height is less imposing, because the summit is flat and shapeless. It looks as if somebody had sat upon it immediately after creation, while it was still warm, and squashed it down.

The railway tracks follow a beautiful river that foams and laughs in a series of little cascades. Frequently the valley spreads out into generous dimensions to give room for haciendas that are well kept and highly cultivated. The farmers are plowing and planting just now, turning the rich loam with modern plows drawn by fine, fat oxen. We realize at once that we have returned to the realms of civilization—out of the past, as represented by the primitive and antique processes of Peru and Ecuador, into the present, as exemplified in the enterprising up-to-date Chilanos, who are as eager to secure the latest modern improvements as their neighbors of the other west coast republics are to cling to the customs of their fathers. This, however, is largely a matter of climate. As you approach the temperate zones nature exacts more labor as the price of existence. A higher value is placed upon human life, and more energy and intelligence are applied to its development.

No city in the world has a finer location than Santiago. It is situated in the center of a magnificent amphitheater about forty miles long and eighteen miles wide, inclosed by a mighty wall of mountains, which for more than one-half the distance are covered with perpetual snow. Lucerne, Interlaken, and other mountain resorts of Switzerland are mere miniatures compared with Santiago, and although La Paz has a much greater elevation, and is surrounded by mightier peaks, they do not lie in such close proximity, and, being nearer the tropics, have not been covered by nature with such a heavy

blanket of snow. The highest peaks that surround Santiago do not rise to a greater elevation than 17,000 and 18,000 feet. The snow line is between 13,000 and 14,000 feet; then comes a belt of timber, and below it the slopes and foothills furnish pasture for millions of cattle and lead down to the wine belt, where are splendid vineyards. One of them, belonging to Mr. Errazuriz, formerly minister of foreign affairs, covers more than 1,000 acres and is claimed by Chilanos to be the largest in the world, although the vineyard of the late Senator Stanford in Tehama county, California, contains 3,580 acres in grapes and more than 1,000,000 vines.

The wines of Chile have long had a local fame, and are now being exported in considerable quantities. There is an association for the promotion of the foreign trade, and the government is aiding it with contributions of money. The climate is similar to that of the Pyrenees. The soil is eminently suitable for grape culture, and the area is practically unlimited. The Macul estate, which belonged to the late Widow Cousino, who was reputed to be the richest woman in the world, is second in extent to that of Mr. Errazuriz, and even more beautiful in its appointments and landscape culture.

The level portion of the amphitheater is highly cultivated with all sorts of crops such as we grow in our temperate zone. It is divided into large haciendas, with fine cattle and horses at the breeding farms which are attached to nearly every one of them. The haciendas of Chile take great pride in their live stock, and breed hunters and running horses as well as more substantial stock. Their residences resemble the baronial mansions of England and their owners live like English lords. Nearly all the estates are heavily mortgaged to meet the extravagance of their owners, who are in the habit of anticipating their incomes to gratify their love of luxury and display, and spending money faster than they make it. It was these people who borrowed the gold which the banks received from the government in redemption of their paper notes.

There are many beautiful drives, parks and pleasure resorts in the neighborhood of the city of Santiago, and on Sundays particularly they are thronged with the amusement-loving

population, who spend the day in recreation and the night in carousal, and the next day in sleeping it off.

In the center of the city of Santiago, and the great amphitheater I have described, is a little park known as "El Cerro de Santa Lucia," which I have long held to be the prettiest place in the world. From the midst of the plain rises a pile of rocks about 400 feet high and at the base covering an area of seven or eight acres. It is a freak of nature. The geologists say that some wandering iceberg dropped these rocks there during the glacial period; others contend that they are evidence of a terrestrial convulsion and were thrown up some time when Mother Earth had a terrible colic, but their origin is a matter of very little importance. It is enough to see that they are there, and have been decorated and improved in a most artistic manner by the late Benjamin Vicuna Mackenna, one of the ablest and noblest men that ever lived in Chile. It is difficult to get a photograph of the place because of the foliage which covers the little mountain. The summit is reached by several winding roads and walks, that are walled up in a most picturesque manner, with towers and battlements like a mediæval castle. At intervals are kiosks for music and refreshment; half way up is a theater, where light opera and vaudeville entertainments are given afternoons and evenings; a little farther on is a restaurant, where people come to dine and breakfast, and near the summit is a little chapel in which the remains of Mr. Mackenna are buried. He owned this place, beautified it at his own expense and then presented it to the city. It was rather incongruous to place a mortuary chapel in the midst of a pleasure resort, but Mr. Mackenna insisted that his bones should be buried here, and in order to make sure of it he built the chapel and the tomb himself and made it a condition of his gift to his fellow-citizens. There is a monument to an archbishop near by, and another to Padre Valdivia, one of the famous knights identified with the conquest of Chile.

Many years ago, before Santa Lucia became the property of Mr. Mackenna, it was used as a dumping ground and a potter's field, and before the cemeteries of the country were

opened to Jews and gentiles, all that sort of folk, including protestants, duelists, suicides, atheists and others who had been excommunicated or were under the ban of the church, found burial here. When Mr. Mackenna began to fit the place out for a park their bones were removed to the corner of one of the catholic cemeteries and were allowed to lie in consecrated ground. The church authorities erected a monument over their remains and inscribed upon it a most extraordinary epitaph, which informs all comers that the souls of those who lie beneath are "exiles from both heaven and earth."

From the summit of Santa Lucia is a sublime view. You can see everything within the great amphitheater I have described, and few landscapes in all the world are so glorious. I used to go there every morning to get this view, and I know people who have been going every fair day for years with the same object.

From Santa Lucia a broad highway called the Alameda leads down to a government park, known as the Quinta Normal, on the other side of the city, four miles away, where a botanical garden and experimental station is maintained by the agricultural department, with a zoo, a museum and a public playground for the benefit of the people. There is a fine exposition building, in which agricultural fairs are held annually, and industrial expositions are made from time to time. A restaurant near by is a popular resort for the rich people, but the poor go to Cousino Park, on another side of the city, which was presented to the public by a rich widow of that name, and is a popular assembling ground for the common people, with cheap cafés, drinking places, merry-go-rounds and various other forms of entertainment for the thousands. It is here that you see the peons of Chile at their best, and can study the customs of a most original and interesting people. In the center of the park is a big circular parade ground with a mile track around it. The latter is used for fast driving and the former for cavalry drills, which attract a great many spectators.

In various parts of Cousino Park are booths and stands for dancing, and any Sunday afternoon and evening you can see

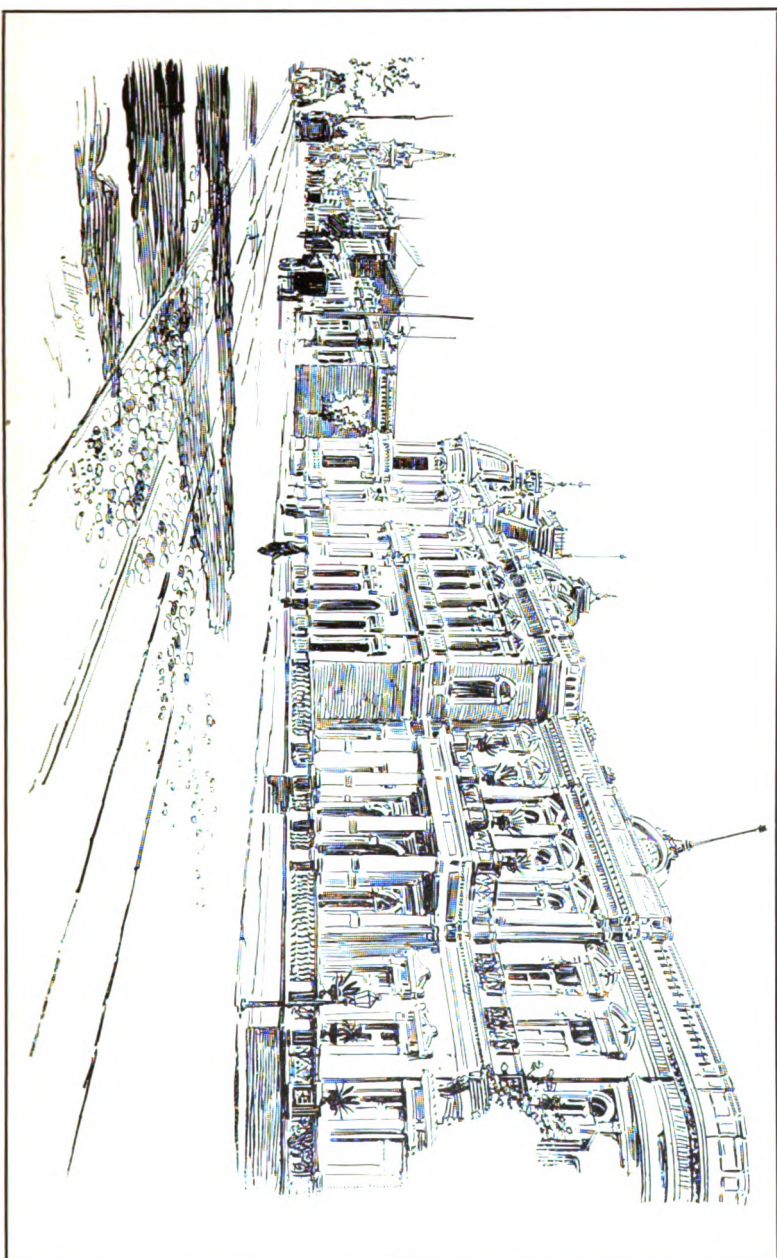
the "zama-cuaca"—the Chilean national dance, pronounced zama-quaker. It is a sort of decent cancan, and the men instead of women do the high kicking. The couples pair off with handkerchiefs in their hands, and dance face to face, while on a bench near by the musicians pick mandolins, thrum guitars and the spectators sing a charming air in polka time. Each dancer waves his handkerchief with graceful gestures in the air, sways around in postures that are intended to show grace and suppleness, and the women raise their skirts just high enough to show the color of their stockings.

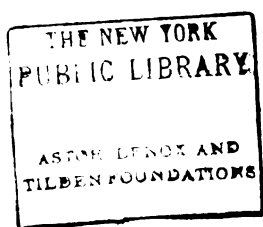
The Alameda, the grand boulevard of Santiago, is 600 feet wide, broken by four rows of poplar trees, and stretches the full length of the city. In the center is a promenade for pedestrians, with a street-car track on either side, and two driveways, each 100 feet wide. The promenade is broken by a number of monuments commemorating important events in the history of Chile, and the statues of famous men. There are several stands where military bands give music every afternoon during the season, when all the population comes out to walk or drive.

Fronting the Alameda are the finest residences in the city, and several of them are magnificent; but the pavements are abominable, not only on the Alameda, which is the favorite driveway, but everywhere throughout Santiago, and it seems extraordinary that this should be tolerated by a people famous for their pride as well as for their fine horses and carriages.

The finest private residences on the southern continent and among the finest in America are those erected by the late Señora Isidora Cousino at Santiago and at Lota, Chile. Her city residence compares well with any in New York, and her chateau of white Italian marble at Lota, where her coal mines are, would do credit to Newport. It stands in the center of a French landscape garden with every possible embellishment, and few pleasure grounds in Europe can compare with it. I know of none in the United States unless it be Biltmore, the estate of George Vanderbilt in the North Carolina mountains, which is, however, essentially different in most respects, being practical in its purpose, while the park at Lota was intended

Residences on the Alameda, Santiago, Chile.





for pleasure. Every particle of material that entered into the chateau at Lota is said to have been brought from France in Señora Cousino's own ships, and the interior is adorned with sumptuous furniture and decorations by famous French artists. The house was incomplete at the time of her death several years ago, and is allowed to remain unfinished. Her sons and daughters, who inherited the estate, have neither the love or taste for luxury that caused their mother to be called "Dona Monte Cristo."

The house at Santiago was designed by a French architect, and entirely constructed, decorated and furnished by French artists and artisans. It is of the Ionic order of architecture, with brick stuccoed to resemble brown stone, panels of blue and yellow faience, tiles set in the façade, imposing cornices, and graceful pilasters to relieve the flatness of the walls. It is surrounded by a typical French garden with an abundance of flowers and perhaps the best lawn in Chile, for turf does not grow well there.

The interior decorations are expensive and artistic, but scarcely appropriate for a private residence. They were done by the same men who adorned the grand opera house at Paris, and would look better in the foyer of a theater or a restaurant than the home of a private family. The entrance hall, which is a noble apartment, and the grand staircase are adorned with frivolous French scenes—the Place de la Concorde on the occasion of a festival; the race course at Longchamps, a mask ball at the grand opera house at Paris, and a striking representation of that center of the world's frivolities, the focus of the boulevards and the avenues at the Grand Hotel in Paris. There has been a great deal of criticism of these decorations. The house has been one of the principal show places in Santiago ever since it was erected. Strangers have always been admitted to share with Madame Cousino the enjoyment of its gorgeousness. Thoughtful people usually suggest that her decorator might have chosen more appropriate subjects for the mural paintings, but those familiar with the taste and the career of that remarkable woman feel that there was no incongruity in the selections.

There are other beautiful residences in Santiago, and many of them, particularly those along the Alameda, have imposing façades; but the real homes of Chile turn their blind side to the public, and their beauties and comforts are only revealed to those who have the privilege of entering them, and to those who catch minute glimpses through the big gates of wrought iron that protect them from intrusion.

Señora Cousino had the reputation of being the richest woman in the world and her extravagance was a frequent theme of newspaper gossip in Europe as well as in Chile; but when the estate was settled after her death there was considerable surprise and disappointment at the low appraisement of the property. It was evident that her enormous income was not greater than her extravagance and that her property had depreciated in value considerably since the revolution. She left four children, two sons and two daughters, among whom the property was divided, but in comparison with her conspicuous hospitality and gaiety their lives are very quiet.

Madame Cousino traced her ancestors back several centuries, and had a collection of their portraits. The ancestors of her husband also came to Chile early, and in the partition of the lands and spoils of the conquest both got a large share, which they kept and increased by adding the portion given to less thrifty and less enterprising associates, until the two large estates became the largest, most productive and most valuable of all Chile and were finally consolidated by marriage. While he lived he was considered the richest man in Chile, and she the richest woman, for their property was kept separate, the husband managing his estates and the wife her own, and people say she was the better administrator of the two. This fact he acknowledged in his will when he bequeathed all of his possessions to her, and she piled his Pelion upon her Ossa, until she had millions of dollars in money, flocks and herds that were numbered by the hundreds of thousands, coal, copper and silver mines, acres of real estate in the cities of Santiago and Valparaiso, a fleet of iron steamships, smelting works, a railroad, and various other trifles in the way of productive property, which yielded several millions a year. She tried

very hard to spend her income and under the circumstances succeeded as well as could be expected.

She had another park and palace, an hour's drive from Santiago,—the finest "estancia" or plantation in Chile, perhaps in all South America, and I do not know of one in North America or Europe that will equal it. This is called "Macul," and stretches from the boundaries of the city of Santiago far into the Cordilleras, whose glistening caps of everlasting snow marks the limits of "the widow's mite." In the valleys are fields of grain, orchards, and vineyards while in the foothills of the mountains, flocks of sheep and herds of cattle feed. Here she gave employment to 300 or 400 men organized under the direction of superintendents, most of whom were Scotchmen. She had one American in her employ at "Macul" whose business was that of a general farmer, but his time was mostly occupied in teaching the natives on the place how to operate labor-saving agricultural machinery.

Farming in Chile is conducted very much as it was in England in old feudal times, each estate having its retainers, who are permitted to use tenements, or homes built for that purpose, and are paid for the amount of labor they perform. These peons are not permitted to accept employment from any one except their landlord without his permission, and are always subject to his call for purpose of war or peace. It is said that the Señora could marshal a thousand men from her two farms if she needed them.

The vineyard of "Macul" supplies the market of Chile with claret and sherry wines, and the cellar, an enormous building 500 feet long by 100 wide is still kept constantly full. On this farm she had valuable imported stock, both cattle and horses, and her racing stable was the most extensive and successful in South America. The Madame took a great interest in the turf, attended every racing meeting in Chile, and always bet heavily upon her own horses.

While the people of Chile are no more enterprising than those of the Argentine Republic they have some different traits. Two of the chief ones are pride and patriotism. They resemble the Irish in many respects, in their wit, recklessness,

their love of a scrap and their tendency to hit a head whenever they see it, no matter to whom it belongs. A Chilano fights for the love of fighting, as Terence Mulvaney expressed it in one of Kipling's stories. They are ardent lovers, devoted friends, vicious and vindictive enemies. They have little self-control, but are impetuous, impulsive, passionate and generous. They make fine soldiers, but have no sense of mercy. They are the best fighters in South America, having a mixture of the Spanish blood and that of the Aracanian Indians, who were never subdued by the conquistadores.

The great obstacle, however, to the development of Chile, the great handicap to her common people and the curse of the country, are the large estates and the system of peonage, under which a poor man has no chance of acquiring property or advancing his interests and condition in life. The Argentine Republic enjoys the advantage of possessing a vast area of public land where everybody can have a farm and enjoy the reward of his own labor. In Chile there is an inexorable law which prohibits individual advancement among the common people, and the painful realization of that fact has deprived the working classes of ambition and self-respect.

Farming is conducted upon a large scale and scientific principles. The agricultural schools of Chile are well attended and exercise a wide influence upon the proper cultivation of the soil. The patron or haciendado keeps a close observation upon every part of the estate, and starts out every morning upon his pony, wearing a broad-brimmed hat and a gay poncho, to supervise the work of his tenants and the peasants in his own employ.

The landholding aristocracy of Chile are a highly educated and cultured people. They live in handsome houses, luxuriously furnished and adorned with works of art that indicate taste and refinement. They have libraries and go in for bindings and first editions and all kinds of fads. They are educated in music, and are much more advanced in social accomplishments than our own people. You seldom find a society woman in Santiago or Valparaiso who does not speak at least two languages, and most of them three. They are

excessively formal with strangers, and are fastidious about matters of etiquette and dress. You can tell the tastes of a people from their shop windows, which in Santiago are as lovely and alluring as those of Paris. They are full of the latest fashions and novelties from every country. In fact, it is the boast of the people that they can buy anything in Santiago that can be bought in Paris.

There are several large department stores and arcades and portales filled with little shops for the sale of jewelry, millinery and fancy goods, which indicates the extravagance and the luxurious tastes of the population. No city of the size of Santiago, 256,000 inhabitants, either in the United States or Europe, has so many fine stores or can show a more elaborate display of the gilded side of life.

Religious toleration prevails and freedom of public worship is permitted. The civil rite of marriage alone is recognized by the courts, although it is customary for people in high life and the middle classes to have a second ceremony and receive the benediction of the church. Among the common people and the laboring element, however, marriages are invariably celebrated at the office of the registrar of vital statistics, and no fee is required.

The cemeteries are open to Jews, gentiles and protestants, and are under the control of the municipal authorities. The spirit of liberty prevails in Chile more than in any other South American country except the Argentine Republic, and any attempt of the conservative party to interfere with the rights of the people or restrict the freedom that was secured by the liberals would provoke its overthrow.

The army and the navy of Chile have reached an advanced state of perfection. The navy is eighth in strength among the nations of the world, being surpassed only by those of England, France, Germany, the United States, Russia, Italy and Japan. The annual appropriations for the support of the navy amount to \$13,000,000, and for the army \$11,000,000. During the five years from 1895 to 1900 over \$200,000,000 has been spent by the government of Chile upon its army, navy and coast defenses. The army is modeled upon the German

system, 24,000 strong, and has German instructors in tactics and discipline, German uniforms also. The officers are fine-looking men, and are very numerous upon the streets of the city.

The cathedral is rather an ordinary looking building from the outside, but the interior is handsome, and the archbishop's palace which adjoins it and fronts the central plaza is one of the largest and most imposing buildings in Santiago.

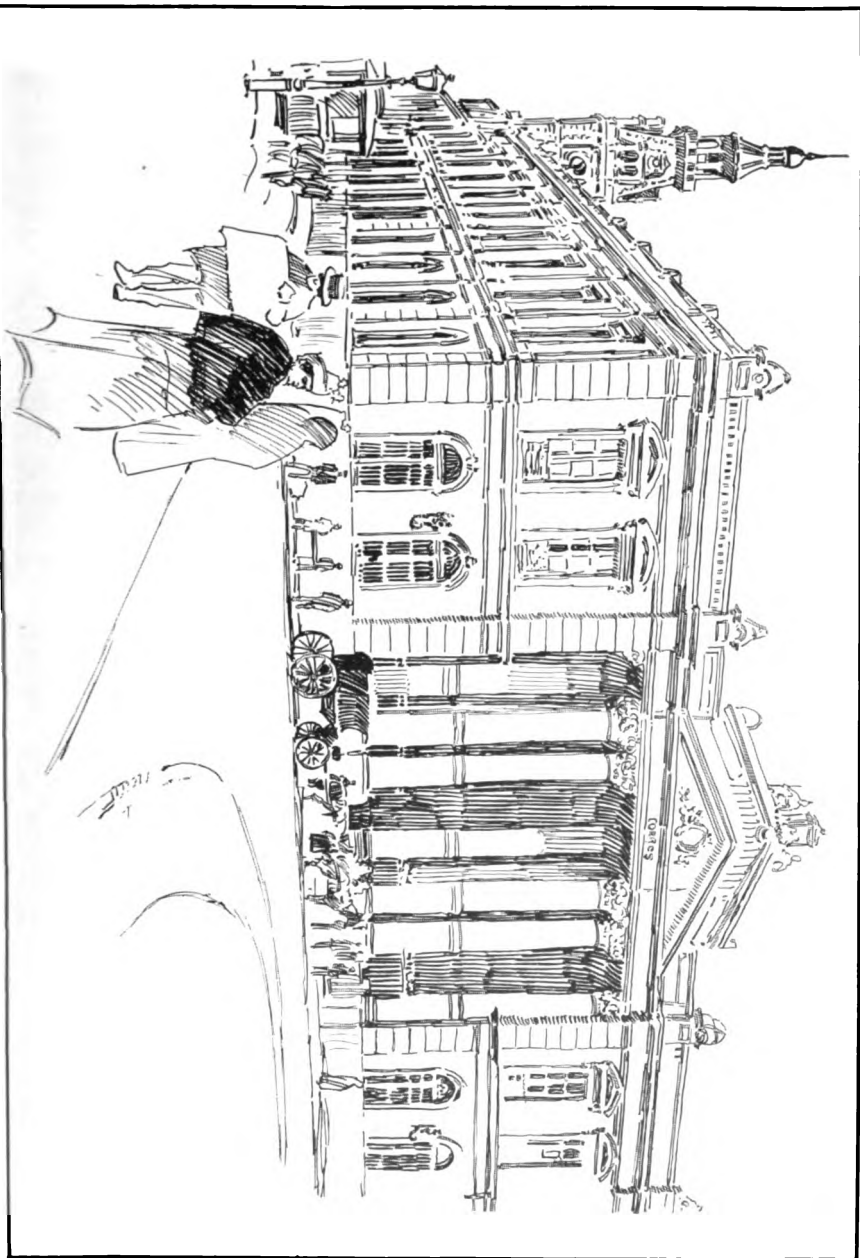
There is a club near by which is equal to anything of the kind in the United States outside of New York City. It has a fine library, reading rooms, papers from all parts of the world, and is a favorite meeting place for politicians.

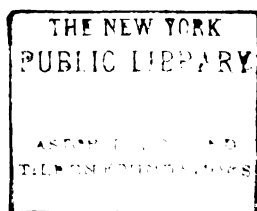
Fronting the plaza on one side are the cathedral and the archbishop's palace, on another side the city hall and the general postoffice, the third side is occupied by hotels, and the fourth by business houses, which are surrounded by portales similar to those on the Rue de Rivoli and the Palais Royal in Paris—rows of small shops, cafés, where the people gather and promenade.

The street-car service is excellent, although the motive power is mules. There is an electric plant in progress, however, and an underground system similar to that in Washington will be adopted very soon. All of the lines concentrate at the plaza in the center of the city, where you can find a car for any of the suburbs. The conductors here, as in other parts of Chile, are young women, who wear a neat livery and perform excellent service. It is a new field for women, but might properly be introduced elsewhere with equal success. The conductors are seldom insulted, and they show great tact in their treatment of refractory passengers. If they have trouble it is only necessary for them to blow a whistle and summon a policeman, who is found upon nearly every corner.

The women conductors are quite independent, and have shown considerable capacity in caring for themselves. They had a strike in Valparaiso not long ago against some offensive regulation, and nearly all the women in town were up in arms to support them.

The priests of the various parishes ride about the city of





Santiago within carriages that bear marks of their profession and distinction. I saw one the other day with a picture of the crucifixion painted like a monogram upon either door, and I have seen other carriages bearing pictures of the saints in whose honor the parishes were christened.

While the people of Chile are very far advanced in civilization, more so probably than those of any other country in South America, you still see and hear some odd things, and they still stick to the Spanish language. It seems impossible for the natives to grasp our English pronunciation, which is sometimes awkward when they have to use ordinary English names. For example, the common name of Jones is beyond their mastery. "J" in the Spanish language has the sound of "H," and the Spaniards pronounce every letter and syllable in a word, hence the Chilanos insist upon making two syllables out of Mr. Jones' name, and calling him Mr. "Ho-nees."

They have similar trouble with Mr. Giles, whom they are in the habit of referring to as Mr. "Hy-lees."

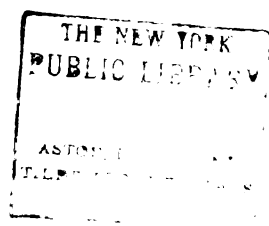
For several days I noticed the word "panqueque" upon the bill of fare at the hotel, and did not know what it was. There is a brand of wine from one of the Chilean vineyards with that name, and I supposed it was perhaps the same thing referred to, although it was difficult to understand why it should appear among the desserts on the menu at the dinner table and on the bills of fare for breakfast. The best way to find out about such things is to try them, and next morning, being in an experimental mood, I ordered a "panqueque," which, to my amazement, was an ordinary griddle cake. Then it dawned upon my dull perceptions that "panqueque" spelt pancake. I called the attention of the head waiter to the discovery, and he seemed quite astonished. He could talk English well, and claimed to be familiar with the cuisine of America. Therefore he did not see anything unusual in my discovery, and I rather think he wrote the bill of fare himself, for he remarked, in a surprised tone:

"What do you call a pancake in America?"

To see the aristocracy of Santiago at its best one must attend the opera, which is given four nights each week during

the winter season by an Italian company brought over with full chorus and orchestra from Milan, Italy, and its performances are as perfect here as there. The opera house, which is one of the finest in the world, surpassing everything in London, and equal to anything we have in the United States, is owned by the municipality, and equipped with costumes, properties and scenery for all the standard operas and everything new that is successful in Paris or other European musical centers. The house is furnished free of cost, and the city government gives the manager a subsidy of \$40,000 a year in cash. The seats and boxes are sold by subscriptions for a season of sixty nights, as in New York, and are paid for in advance. There is usually a guaranty fund also to protect the manager from financial loss. Those who lease boxes and seats for the season often sublet them to strangers, and it is not considered an impropriety, so that people who are spending only a few days in the city can go to the box office and obtain seats by paying the regular rates. The same company appears thirty nights during the season at Valparaiso under similar conditions and with a smaller subsidy. The singers in the chorus as well as the orchestra are all Italians, and the principal ballet dancers also come from Milan. The soloists are first-class. The people will not tolerate anything else, and the audiences are quite as interesting as the performers, for the dressing and the display of jewels is equal to that seen at the Covent Garden in London, the Grand opera house in Paris, or the Metropolitan in New York. It surpasses the displays at Berlin and other cities of Germany, where the people go to hear the music and not to show their clothes.

There is a large foyer in which the people promenade between the acts, refreshment rooms where ices, wines, sandwiches and other light refreshments are served, a gentleman's café, a smoking room and other conveniences. The president of the republic has a large box on one side of the stage, and the mayor of the city has one on the other side, which are ex-officio, and a novelty I have never seen before is mourning boxes, protected by screens, in which people who are not wearing colors or going into society can see without being



seen, and enjoy the music in retirement. Above the foot-lights upon the stage is a long row of funnels which communicate the music by telephone to different residences of the city.

Monday is a *dies non* in Chile. People have learned by long experience that they can expect little from their servants and employes on that day. They call it "San Lunes"—sobering-up day. A manufacturer goes to his shop Monday morning to find that only a few of his hands have reported for duty, and even they are in a seedy condition. In some establishments, in places where labor is plenty, the hands who are absent on Monday get no work during the week, but this rule cannot be applied in most of the cities, because labor is so scarce that employers are at the mercy of their help, and are compelled to tolerate their delinquencies.

The mistress of a household allows her servants a Sunday off in turn, but seldom expects them to report for duty on Monday, and is never surprised to receive a message from the police station. Carpenters, masons and other mechanics seldom work but five days in a week, for the reasons I have given, and there is a proverb that the shoeshops are never open on Monday.

The same customs attend the celebration of legal holidays, and it requires five days for the people of Chile to express the patriotic emotions inspired by the "Diez y Ocho de Setiembre"—the 18th of September—or the "daisy-ocho," as it is familiarly called—the anniversary of Chilean independence. Everybody prepares for it. Houses are freshly painted, flag poles are raised over every roof, bonfires burn on the surrounding mountains, fiestas are held in every park and plaza, special masses are sung in the churches, all the banks, business houses and manufacturing establishments are closed, schools are dismissed, labor is suspended on all the plantations, and everybody, young and old, great and small, engages in the festivities with a zeal and enthusiasm that is seldom seen elsewhere.

Chile's struggle for freedom dates from September 18, 1810, when the first revolutionary assembly met at Santiago, declared the independence of the colony from Spain, and appointed a provisional government. It was not, however,

until February 12, 1818, that Barney O'Higgins, the Irish patriot who had been the successful commander of its revolutionary forces, solemnly proclaimed an independent republic in the grand plaza of Santiago, in the presence of the army and a great concourse of people. O'Higgins, the bishop and all the officials there knelt and made vows to God that they would sacrifice their lives and their fortunes in maintaining their independence, and then marched up the valley, where on April 3 of the same year—1818—they destroyed and captured the last remnant of the Spanish forces after a protracted battle and terrible carnage.

Although the patriotic enthusiasm of the Chilanos is greatly to be admired, the wise people of the country have long felt that the celebration does more harm than good because of the drunkenness and the crime and distress which attend it. The poor people save up money the whole year round to pay for a grand spree on this occasion, and when it is over find themselves not only penniless but often deeply in debt as the price of their pleasure. The hospitals are filled with wounded, and there are always a number of deaths from violence and exposure.

To correct these errors and promote the cause of temperance generally among the people a society called "Liga Contra el Alcoholismo," which literally means "a league against excessive alcoholism," has recently been organized by ex-President Montt and other prominent citizens of Chile. Its purpose is defined in its name, and it has already done a great deal of good. It is not a total-abstinence society. Its promoters are too wise to make such a suggestion in Chile, but it is their object to restrain by legislation and moral suasion the appetites of the people and cultivate habits of temperance and moderation. It is asserted in the preamble of the organization of this society that there is more public drunkenness in Chile than any other country in the world, and any one who witnesses the "Diez y Ocho" will readily believe it. It is also asserted that the physical, mental and moral condition of the people is being degraded by the excessive use of alcohol. Congress is asked to pass laws regulating and limiting the

sale of liquors and employers are urged to change the method of paying their hands.

Ordinary factory hands and laborers in the cities of Chile receive from 40 to 80 cents a day, according to their skill. It is the custom to pay each hand 20 cents a day, called a "diario," in order that he may provide food for his family. He gets the remainder of his wages Saturday night, and usually spends every cent before Monday morning for drink and gambling. Few of the working people ever save money. There are no savings banks or building and loan associations. Under the leadership of an American gentleman the employés of the government railways have organized a mutual savings system known as the "Caja de Ahoros," which is entirely voluntary, and an arrangement is made with the paymasters to deduct a certain amount from their monthly wages and deposit it with the treasurer of the society as an insurance fund. Similar organizations are found in several manufacturing institutions, but they are not encouraged by the managers, because the patrons are always begging for the money on deposit and offering all sorts of excuses and pretexts for withdrawing their savings, and thus making nuisances of themselves.

Saturday is beggars' day, when every mendicant is allowed to appear upon the streets and in the public places and solicit alms from house to house. On other days of the week none but licensed beggars are allowed to appear, and those consist of disabled soldiers, widows of dead soldiers, blind people and cripples, who obtain certificates at police headquarters which give them privileges ordinary beggars do not enjoy.

On Saturday also the benevolent societies issue food and other aid to the needy. The places where aid can be obtained are duly advertised in the newspapers and are responded to by large numbers.

Everybody has heard of beggars on horseback, but they are seldom seen except in Chile, where every Saturday the sight is a common one. Horses are plenty and cheap. Everybody rides in the country districts, and those who do not own animals can easily borrow them for the day. On the country

roads and in the villages there are hundreds of decrepit creatures going from house to house and from store to store and visiting the haciendas on horseback begging bread, old clothes and anything else that can be given away.

Attached to the carriages in the cities and on the haciendas one sees fine horses, large, clean, spirited animals, as fine as any in the world, but the ordinary draft animals are ponies, which are used both for packs and to haul heavy carts. They are tough, strong and docile, will climb the steepest and roughest trails as sure-footed as mules, and are capable of great endurance. As pack animals they carry amazing weights and do not seem to mind what articles they are loaded with. You often see ponies laden with bureaus, tables, sofas, sewing machines, chests of drawers, iron bedsteads, mattresses, rocking chairs and every other kind of household furniture and utensils. The carts are high and have two wheels. There is usually one pony between the shafts and a second hitched outside with a saddle, upon which the teamster rides. Neither wears a bit, but they are driven with halters made of braided leather thongs. These ponies are said to be of Arabian ancestry, having been introduced here soon after the conquest. They make excellent saddle horses, having an easy, comfortable gait, good speed and great endurance. A first-class saddle horse, well bred, of large size, can be bought for \$50, a well-trained hunter for \$100 and the ponies I have described for from \$10 to \$15 each.

XXV

THE PRESIDENT AND THE GOVERNMENT OF CHILE

The president of Chile lives in the upper corner of a vast and gloomy old building which is called the Moneda, because it was once used for a mint. It is large enough to accommodate all the members of the cabinet and their clerks. Congress meets in a stately edifice only a few blocks away, but has recently been driven out of it by fire and has taken refuge in the University building until the congressional halls can be repaired. There are many other fine public buildings in Santiago, by far the most imposing from an architectural standpoint in all South America, and the private architecture is quite up to date.

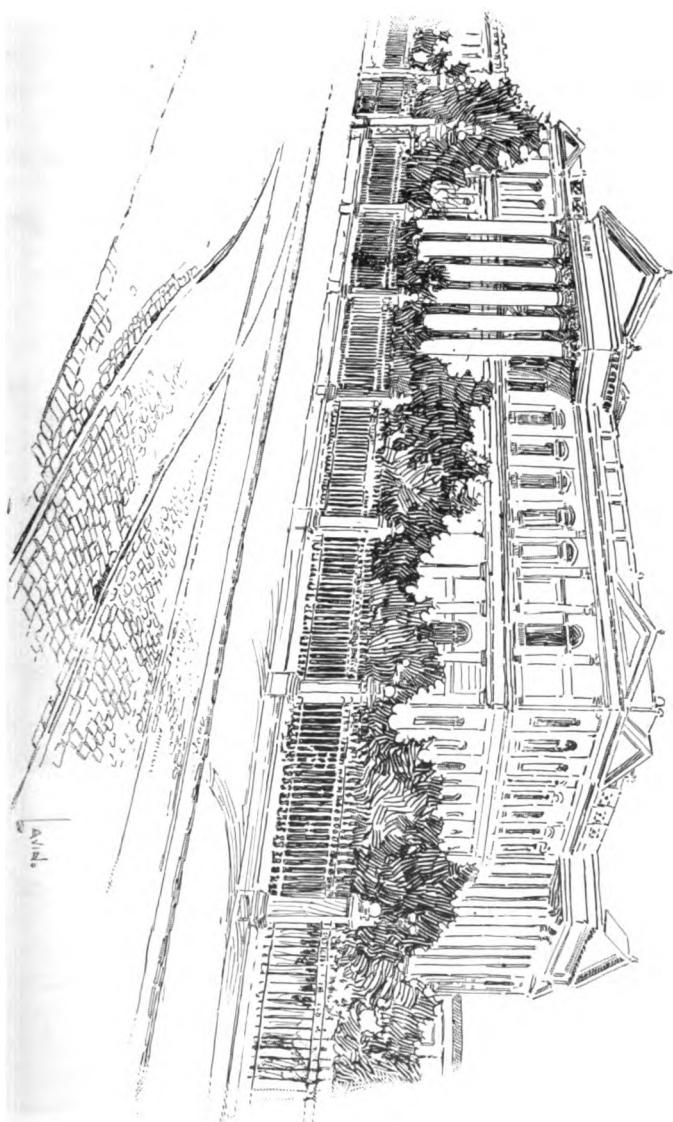
Spacious apartments in one corner of the Moneda are reserved for the president in connection with his offices. He does not always live there, although it is convenient for him to do so, but the apartments are kept up for his use at any time he may desire to occupy them, and all the presidents have made them available from time to time, although they may have retained their private residences elsewhere.

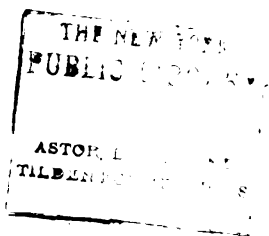
In Chile, as in France and England, the ministry is responsible to the legislative branch of the government as the representative of the people, and not to the executive, although he appoints them; and all legislation affecting the general policy of the country is supposed to originate with them. An individual member of congress may propose a financial measure, for example, but it is not likely to receive any attention unless its author happens to be the leader of one of the parties, and then it would not be expedient for him to do such a thing. At the beginning of every session the president submits a message recommending the legislation he desires, and sooner or later thereafter the different members

of his cabinet present drafts of laws in which those recommendations are formulated. These are discussed, amended and revised by congress as much as may be considered proper or permitted by the party leaders. Sometimes entirely new measures may be substituted with the assent of the cabinet, but if an important bill is rejected it is construed as a lack of confidence and the cabinet resigns. Thus, during the first two years of his administration, President Errazuriz was compelled to appoint six different cabinets because of the refusal of congress to accept financial legislation submitted by them.

Unlike most of the South American countries Chile will not tolerate a boss. That was demonstrated ten years ago when President Balmaceda attempted to defy congress. As a warning for all future presidents and at an awful cost of lives and money he found that the scheme would not work. Balmaceda was by far the best president Chile ever had—the ablest, the most progressive and the most popular, and in many respects the wisest, although he fell into a fatal error when he attempted to carry out reforms that congress would not indorse. It is said that he was influenced by the advice of his mother, who was a woman of strong character and stubborn purpose, but the army and the navy, the church and the plantation aristocracy sustained congress and the constitution. After a bloody struggle Balmaceda was overcome, took refuge in the American legation and committed suicide. It was a bitter factional fight, but the feeling has disappeared and now almost everybody is willing to admit that Balmaceda was wise, honest and a great benefactor to his country.

The overthrow of Balmaceda restored to power the old clerical party, now known as the conservative, which is composed of the landed aristocracy, the old Spanish families, the church and the old-fashioned reactionary element that is found in all communities, but is more numerous in the Latin-American countries than elsewhere. The liberals have not been able to recover from the demoralization of their terrible defeat and are split into several factions under rival leaders known as liberals, democrats, radicals and Balmacedists. They all profess similar principles, but seek their application by





different means and methods. The conservatives, although in a minority, are compact, harmonious and united by social as well as political coalition and have the powerful organization of the church to support and aid them.

The constitutional inability of the President of Chile to dissolve the legislature of the Republic when it is crippled by a deadlock, has been the cause of great embarrassment, and occasioned the revolution of 1891 and the overthrow of President Balmaceda. From 1888 to 1890 there was a political situation in Chile similar to that which exists at this writing (1899), and continual changes in the cabinet occurred because no political party was able to control a majority of the votes in the chamber of deputies. At the next election President Balmaceda took active measures to secure the return of a sufficient number of Liberal candidates to control the lower house, but he was not successful. Then he adopted another strategic movement and determined to defy practice and precedent and retain his cabinet in office regardless of votes or lack of confidence and refusals to adopt their recommendations. He construed the constitution of Chile to be similar to that of the United States instead of France, which had been taken as a model, and declared that the executive had the authority to select his advisers without the approval of the lower branch of congress. Some of the ablest lawyers in Chile still hold this view, but the congress refused to accept it, and declined to vote the necessary supplies to carry on the government as long as the existing cabinet remained in power.

Balmaceda yielded in 1890 and tried once more to secure a congress that would support him, but this also proved a failure and he again declared his cabinet independent of the caprice of the chamber of deputies. Congress retaliated as before by refusing to appropriate money for the offensive ministers to disburse. In January, 1891, Balmaceda, by decree, declared the appropriations of the previous year to be continuous until congress should otherwise provide. The Congress promptly pronounced the action of the president unconstitutional and revolutionary and declared his seat vacant.

When peace was restored, after the fall of Balmaceda, and congress was firm in power, the presidential election of 1891 was absolutely free; there was no coercion, corruption or unfair returns, and Admiral Montt remained in office for five years without feeling the restrictions that had been so odious to his predecessors; and he was enabled to keep in office a responsible minister during his entire administration up to the last year when the elections brought to the front new and ambitious men and awakened political animosities which have prevented necessary legislation. It was under such circumstances that President Errazuriz was elected in June, 1896, and assumed office during that year. He has tried to organize cabinets first from one and then from another party in congress, and also by coalitions from several parties without success, and has never been able to keep his ministers in power for more than a few months at a time, the differences depending almost entirely upon financial legislation instead of religious reforms as was the case during the time of Balmaceda.

The peace of Chile is vexed by three international complications. The first and most serious is the controversy with the Argentine Republic over the boundary line which in 1898 became so acute that war seemed imminent. Although they maintained a bold and belligerent attitude both nations appealed to the United States to use its good offices in securing a settlement, which happily was arranged through the appointment of Mr. W. I. Buchanan, the United States Minister at Buenos Ayres, as arbitrator. The southern section of the boundary line, which runs through an almost uninhabited district and is therefore of comparatively little importance at present, will be drawn by Queen Victoria who has appointed a commission to visit Patagonia and make a survey. The decision will be accepted by both governments and there is no further danger of hostilities growing out of the interpretation of the ambiguous treaty made by the two governments many years ago which says "the frontier shall be the division of the watershed in connection with the highest points of the Andes."

The international question of second importance involves the future of the provinces of Tacna and Arica which are held by Chile in lieu of indemnity for the cost of the late war with Peru. On this point, however, Chile is not suffering either loss or anxiety because she derives a large revenue from that territory and will continue to do so as long as the question is unsettled. The treaty of peace provided that Peru must pay Chile \$10,000,000 in order to recover her lost provinces, or that Chile must pay Peru \$10,000,000 if the people of those provinces decide by vote to remain citizens of Chile rather than go back to Peru. The limit of time allowed Peru to redeem the pawned provinces expired in 1894, but she was unable to pay the indemnity, and Chile, not being prepared to pay Peru \$10,000,000 at that time, granted an extension, or rather allowed a lapse without prejudice to either party. In 1898, when Peru began to recover her prosperity, she pressed for a settlement and made a treaty under which it was provided that the people of Tacna and Arica should have an opportunity to decide under which king they would serve; the government of Italy being selected as an umpire to secure a fair decision. The congress of Peru has ratified this treaty, but the congress of Chile declined to do so and hung it up indefinitely.

The long strip of desert where lie the nitrate mines from which Chile derives about \$20,000,000 a year revenue, an average of \$5.50 per capita of the population, was taken from Bolivia during the war of 1881, and will never be given back, although the conscientious citizens of Chile would like to have a lawful transfer which would console the conscience of the nation and enable it to show unclouded title to its most valuable possessions. For several years an attempt has been made to induce Bolivia to sign a treaty ceding this section of territory to Chile, but the Bolivian authorities have refused to do so even though Chile has offered them a seaport and a right of way across the desert to reach it. It has also been proposed that Peru convey the provinces of Arica and Tacna, now held by Chile, to Bolivia, provided Chile will release Peru from the payment of the \$10,000,000 of indemnity, and Peru will release

Chile from the same. In other words, Chile proposes that the territory in dispute be transferred to their neighbor Bolivia, so that she can have access to the sea and call everything square.

The war with Peru made Chile very rich, the richest country in the world in proportion to her population. From the nitrate fields of Tarapaca alone, which were taken from Bolivia, up to 1st of January, 1900, the government of Chile had received no less than \$200,000,000 from export duties on nitrate alone, and if this enormous sum had been wisely applied to internal improvements, the development of the natural resources of the country and the education of the people, it would have placed Chile among nations of the first class in civilization, but a large proportion of the money has been wasted, and more has been expended in the construction of fleets and fortifications, and in the support of an army which has diverted the young men of the country from profitable industry.

The annual revenue of the government will average \$40,000,000 a year, with a population of less than 2,750,000. The public debt is comparatively small, amounting to about \$83,000,000, which is secured by 1,250 miles of railway, appraised at \$70,000,000; public lands valued at \$40,000,000; nitrate property, \$50,000,000; guano deposits, \$5,000,000, and other property in the way of assets being valued at more than double the national indebtedness. The people of Chile have great wealth as well as the government. The farm lands under cultivation are assessed for taxation at \$340,000,000, and the city real estate at \$225,000,000, making a total of \$565,000,000 or an average of about \$188 per capita of the population.

The relations between Chile and the United States have not been friendly for many years. The prejudice of the people of the former republic was excited by the attempt of our government to interfere in behalf of Peru during the War of 1879-81. We entered an earnest protest against the devastation of Peru by the Army of Chile, and sent a commission to both countries to tender our good offices in negotiating peace. As is often

the fate of peace makers, we succeeded only in awakening the animosity of both countries,—that of Peru because we failed, and that of Chile because we attempted to intervene and prevent her from reaping the fruits of victory.

This national prejudice against the United States was stimulated in a considerable degree by the jealousy of British traders who were then enjoying a monopoly of the foreign trade of Chile, and frequent misunderstandings aggravated the case. During the revolution of 1891 in Chile, matters came to a very acute stage. The sympathies of the United States were with President Balmaceda and the constitutional government, and when he was reduced to extremities and compelled to flee from the palace, he sought asylum in the American legation, which was then presided over by Patrick Egan, the Irish advocate, whose appointment as minister to Chile was severely criticised by the English colony in that country which is large and influential. When the revolutionists seized the capital they demanded the surrender of President Balmaceda, but our government declined to comply and he remained under its protection for several weeks. Mr. Egan's instructions from President Harrison were to shelter and protect his guest until he was satisfied that Balmaceda would be given a fair trial and full justice by those who had overthrown his government. At the same time, President Harrison declined to recognize Mr. Montt who had been sent to Washington by the revolutionists with credentials as their minister, and who made frequent applications to the Department of State for an audience in his official capacity.

In the midst of these complications, the United States marshal of the southern district of California seized and held the steamship "Itata" of the Chilean line, which was being loaded with arms and ammunition for the insurgents at the port of San Diego. This created a tremendous excitement in Chile, and frequent threats of war were made unless the "Itata" and her cargo were released. The vessel was tied up in the courts until it was too late for her cargo to be of any value to the revolutionists, and the dispute was amicably settled. But the irritation it caused in Chile did not subside.

Another cause of complaint on the part of the successful insurgents was the suspicious movements of the United States cruiser "Baltimore" which then lay in the harbor of Valparaiso under the command of Admiral, then commander, Schley. Nearly all of the Navy of Chile joined the revolution against Balmaceda, and Admiral Jorge Montt was the principal leader. On the other hand the greater part of the army remained loyal to the government. It was therefore an odd sort of conflict, a fleet of ships at sea attempting to carry on war with an army on land, and the revolutionists did their most serious damage by occupying the principal seaport towns and seizing the custom houses which furnished almost the entire revenues of the government. During this time the "Baltimore" was cruising up and down the coast looking after the interests of American citizens, and having the privilege of entering and leaving the blockaded ports, at will. Commander Schley was accused of furnishing information concerning the movements of the fleet to the Balmaceda government. He was also accused of assisting to cut the cable so that the revolutionists were deprived of the privilege of communicating with each other and the outside world. Both of these charges were untrue, and a careful investigation failed to show any violation of the neutrality act on the part of the "Baltimore," although it did not satisfy the prejudices of those who sympathized with the revolution. Towards the close of the war, after the revolutionists had obtained control of Valparaiso and the capital, occurred the lamentable tragedy referred to in diplomatic correspondence as "The Baltimore Case," which brought the two nations to the verge of war. Unfortunately, two boats' crews from the "Baltimore," on shore leave, landed in Valparaiso on October 16, 1891. In a saloon, in a rather disreputable quarter of the city, an altercation arose between Chilean sailors and some of the Baltimore's men. In the row one of the Chileans was knocked down. The Yankee sailors were then assaulted with fists, clubs, knives, and revolvers. They sought to escape by boarding a street car. The car was pursued by a mob and the sailors were dragged from the car. A riot followed. More than one hundred

armed men fell upon the sailors after they were dragged from the car. Charles W. Riggin, boatswain's mate, was killed instantly. William Trumbull, a coal heaver, died from injuries received at the hands of the mob. Thirty-six others were more or less seriously injured. Commander Schley caused an investigation to be made, and on October 22 telegraphed the results to General Benjamin F. Tracy, then Secretary of the Navy.

The latter recently related the hitherto secret history of the affair as follows: "When Commander Schley's report was received at the Navy Department, Mr. Blaine, the Secretary of State, was out of town. I presented the report to the President, who, after going over it carefully, sent a note to the Chilean Minister of Foreign Affairs, Matta. The note was very carefully worded and extremely mild in its tone. In substance, it stated that the report of the trouble had been received and that the President hoped that the seriousness of the affair had been exaggerated. If, however, the first report proved to be a correct statement of the case, the President expressed himself as confident that the Chilean Government would make whatever reparation was necessary.

"Soon after this note was sent, Mr. Blaine returned to Washington and was made acquainted with the situation. No reply to the President's note was received for a long time. In the interval Mr. Blaine tried to arrive at some understanding with the Chilean minister at Washington, Señor Pedro Montt. In this he failed, and, at the end of several weeks, the reply from the Chilean Government was received. It was so insulting that it might almost have been a cause for war in itself. It sought to justify the assault on our sailors and dodged the issue in every way possible.

"Then Congress met and the President dwelt at length upon the incident in his message. While Congress was considering the matter on January 20, 1892, Minister Montt presented a note from his Government stating that Mr. Egan was persona non grata, and that the Chilean Government would be pleased to have another minister sent. This note, coming on top of the first one, and neither accompanied by an apology

or an expression of the desire to make any reparation, President Harrison sent what was practically an ultimatum to the Chilean Government. In that note the President held that the assault on the Baltimore's men was unprovoked; that the Valparaiso authorities had flagrantly failed in their duty to protect our sailors; that he could not think of recalling Mr. Egan, and that he should insist upon an indemnification of the families of the sailor's killed and of the sailors themselves who had been injured, together with an apology from the Chilean Government.

"This note dispatched, our preparations for an emergency began. These were carried on so quietly that it never has been known just how far we went. The reason that we were able to keep what we were doing from the public was that all the preparations on the part of the Government were controlled by one person, who carried on all his transactions with principals and not with agents. In this way the Government was saved a considerable amount in commissions.

"As soon as the note was sent the Chairmen of the Committees on Naval Affairs of the Senate and House were invited to a conference with the Secretary of the Navy. Whatever that official did after that was with the approval of those gentlemen. The first order issued was to make every available ship in the navy ready for immediate service.

"Next, all available coal on the Pacific coast was bought by the Government, and the largest steamer owned by Collis P. Huntington was chartered to carry it to Montevideo. There were 5,000 tons of this coal. Two cargoes were purchased in London and two more cargoes in New York, all to be delivered at Montevideo. Then the American line, or what is now the American line, steamer Ohio was chartered for a repair ship. She was sent to Boston and work was immediately begun on her to put her in shape for service.

"These arrangements made, Captain Mahan was invited to consult with the Secretary of the Navy. Before the consultations were over a plan of action had been completely mapped out. According to this plan, the first order to be issued was to concentrate the fleet. A point of concentration was agreed

on, and this was to be telegraphed to the three fleet commanders with the orders sent to them to begin operations. Admiral Gherardi was to be in command of the united fleets.

“According to the plan laid out, after the fleets had concentrated, they were to proceed to Chile, drive the Chilean men-of-war under the guns of the forts at Valparaiso, and then attack the whole coast line of Chile. The coal mines in the southern part of that country were to be seized, thus cutting off the coal supply for the warships of the enemy, and all other details were looked after. Then came Chile's note of apology and her offer of \$75,000 indemnity, which was accepted. This was distributed among the sailors who had been injured and among the families of the dead.”

XXVI

THE BACKBONE OF THE CONTINENT

What is known to geographers as the Cordilleras de los Andes is the longest and the highest range of mountains in the world. It extends from Tierra del Fuego to the Isthmus of Panama, and although some of the peaks of the Hⁱmalayas are higher they are not as numerous or as accessible. There are two ranges of the Andes almost parallel, the second range being known as the Cordilleras de la Costa, which follows the coast line of the Pacific from Chile to Ecuador, being broken at intervals by vast deserts and being irregular in direction and in sequence. The main range, which is the backbone of the continent, is familiarly known as the Cordilleras. The shorter range is usually referred to as the Andes.

South of the Straits of Magellan are two peaks rising more than 7,000 feet high in the center of a range that crosses the archipelago of Tierra del Fuego. By some prodigious convulsion those islands were separated from the continent and the chain was broken by the Straits of Magellan. On both sides of the straits the mountains rise to a considerable height and are covered with magnificent glaciers. Voyagers passing through the straits have the privilege of witnessing some of the sublimest scenery on earth. Mount Darwin rises 6,600 feet and Mount Sarmiento 6,800 feet directly from the water, and both are covered with ice and snow almost to their feet during nine months of the year. Commencing there the Cordilleras run northward and form the boundary line between Chile and the Argentine Republic. The division as fixed by W. I. Buchanan, the United States minister, as arbitrator, is the "cumbre" or crest of the main range or the grand divide—the watershed between the Atlantic and the Pacific. The Cordilleras de los Andes continue an unbroken range to the

Caribbean sea and the Isthmus of Panama. The breadth of the base in Chile is from twenty to one hundred miles, a single chain; in Peru and Bolivia it widens to 700 miles. The fork of the chain occurs near latitude 40 in the state of Valdivia, Chile, and from there the irregular Cordilleras de la Costa follow the shore, sometimes even dipping their feet into the sea. There are points along the coast of Chile where the mountains rise as high as 8,000 feet directly from the water. These two main ranges at intervals are united by transverse ranges called "bolsones," which in Spanish means the rungs of a ladder, and some of them have peaks with an elevation of over 20,000 feet. Between these titanic buttresses are elevated plateaus from 8,000 to 13,000 feet above the sea, which are called the "Puna," or the "great Andean basins," and are the most populous and highly-cultivated part of the continent.

Bolivia is the most mountainous country of the world, and that portion of the great chain known as the Cordillera de La Paz, in the neighborhood of Lake Titicaca, is of surpassing grandeur—a colonnade of pure white summits, extending more than 150 miles almost in a direct line. No other group of peaks will compare with them. In Ecuador there is an irregular cluster of extinct volcanoes which rival those of Bolivia in beauty and picturesqueness, but lack their elevations. In Bolivia the twelve peaks of the Cordilleras de La Paz rise above 20,000 feet. In Ecuador there are twenty volcanoes in a single cluster, and eighteen of them are covered with perpetual snow. The lowest is 15,922 feet in height, and the highest, Chimborazo, reaches an altitude of 22,500 feet. Three of the volcanoes are active, five are dormant and twelve are extinct. Eleven of the peaks have never been reached by any living creature except the condor, whose flight surpasses that of any other bird. Cotopaxi is the loftiest of active volcanoes, but its walls are so steep and the snow upon its breast is so deep that ascent is impossible.

The loftiest mountain in the Andes is in dispute. It was formerly Chimborazo, in Ecuador, afterward Illampu, in Bolivia, and now Aconcagua, in Chile; but the controversy

cannot be settled until more exact measurements are made. Sir Martin Conway, the Irish Alpine climber, made an ascent of several of the highest peaks in Bolivia, and reported the summit of Illampu to be 25,250 feet. This was gratifying to the people of Bolivia, but after he went to Chile and climbed Aconcagua, which he reported to be 23,200 feet in height, he discovered an error in his observations on Illampu and knocked off 2,000 feet or so, so that the pride of the Chilanos might not be wounded.

Very few of the measurements of the mountains in South America are accurate, but Professor Bailey of the Harvard observatory at Arequipa has collected all the data available, from which he has made a catalogue of 288 peaks over 10,000 feet in height between the Isthmus of Panama and Cape Horn; 131 peaks over 18,000 feet, seventy-nine over 19,000 feet, forty-two over 20,000 feet, six over 21,000 feet, thirteen over 22,000 feet and probably four peaks over 23,000 feet. Sixty-eight of these peaks are extinct volcanoes and five are active—two in Peru and three in Ecuador.

The following is a list of peaks found by Professor Bailey to be more than 20,000 feet in height:

Aconcagua, Chile	23,200 to 24,760
Illampu, Bolivia	21,286 to 25,250
Illimani, Bolivia	21,040 to 24,200
Sahama, Bolivia	23,014
Coropuna, Peru	22,800
Chipicana, Bolivia	22,687
Apolobamba, Bolivia	22,374
Tupungalo, Chile	22,469
Montenegro, Chile	22,300
Pallagua, Bolivia	22,300
Huascar, Peru	22,051
Parinacota, Bolivia	22,078
Huallatierra, Bolivia	22,000
Pomerape, Bolivia	21,721
Huayna Potosi, Bolivia	21,882
Cachi, Chile	21,685
Misti, Peru	20,467
Mururata, Chile	20,418
Toroni, Bolivia	20,316

Acaquilcha, Bolivia	20,250
Iquima, Chile	20,190
Juncal, Bolivia	20,181
Choja, Bolivia	20,000
Coypasa, Bolivia	20,000
Cancoso, Bolivia	20,000
Nevadavegro, Chile	21,685
Calchaqui, Chile	21,626
Chimboazo, Ecuador	21,611
Llullaillaco, Chile	21,654
Angelpico, Peru	21,215
Pico de Tacora	21,252
Mercedario, Chile	21,300
Castillo, Chile	21,356
Pular, Chile	21,000
Haundoy, Peru	21,090
Descabezado, Chile	20,965
Antofalla, Chile	20,889
Famitina, Bolivia	20,650
Panira, Chile	20,735
Viscachillas, Bolivia	20,506
Chachacomani, Peru	20,355
Callinsani, Chile	20,530

The snow line varies with the latitude except in the desert Atacama in southern Peru, where, because of the extreme dryness of the atmosphere and the infrequent snowfalls, the mountains are bare at elevations of 19,000 and 20,000 feet. El Misti, at Arequipa, with an elevation of over 20,000 feet, is often entirely free from snow, and the north side, which is continually exposed to the sun, seldom has snow on it for more than two hours at a time. On the south side of El Misti there is usually a beautiful cap of white.

In Colombia the snow line is about 14,000 feet; in Ecuador, near the equator, about 17,000 feet; in Peru and Bolivia, about 15,000 feet, and in Chile from 13,000 feet in the neighborhood of Santiago to 3,000 feet at the Straits of Magellan.

On the Cordilleras de la Costa there is no timber, and there is very little on the western slope of the main chain, the Cordilleras Real (Royal), as they are sometimes called. On the east slope, however, the timber rises directly to the snow line

and one may often stand upon a glacier and gaze into a valley filled with tropical vegetation.

On the western slopes of the coast line there is no vegetation whatever, except here and there in a narrow valley which can be irrigated. In the Puna, or the great plateau between the two ranges, barley, wheat, corn and other hardy crops grow at an elevation of 13,000 feet. Sheep feed to the snow line, the Alpaca and Vicuna being especially fond of the cold, bleak mountain sides, where a feeble tuft grass grows.

The Cordilleras de la Costa are crossed by four railways, one from Valparaiso to Santiago, Chile; the second from Antofagasta, Chile, to Oruro, Bolivia; the third from Mollendo, Peru, to Lake Titicaca, where the summit is reached at an elevation of 14,666 feet at Crucero Alto; and the fourth is the famous Oroya road in Peru, which pierces the mountains at the Galena tunnel, 15,665 feet above tide water. The latter is the most elevated point reached by a railroad or where machinery is operated by steam.

Since Professor Bailey prepared his catalogue there has been an eruption of Calbuco, which is listed as an extinct volcano, 4,730 feet above the sea level, in latitude 41.21 south, near the northern entrance to Smythe's channel, and just south of the city of Valdivia. There have always been evidences of previous activity of the crater of Calbuco, but no signs of activity have been reported since the arrival of the Spaniards until March, 1899, when clouds of smoke were noticed hovering about the summit. A few days later there was an eruption of great violence, and a rain of ashes fell upon the country around about, so heavy as to obscure the sun and make it necessary for the inhabitants to fly from their homes. The detonations were heard for at least one hundred miles distant, but there was no earthquake. Following the shower of ashes came a rain of hot stones and lava, which continued at intervals for several days and destroyed nearly everything for a radius of fifteen or twenty miles around the base of the mountain. The harvest, which was nearly ripe, was ruined; the cultivated ground was covered with ashes and stones, the pastures became deserts, the springs dried up, the forests were

destroyed by fires, and the inhabitants were compelled to permanently abandon that section of the country. Since then the eruptions have been periodical, but slight.

The main chain of the Andes has never been crossed by a railway, although there have been a number of surveys. Professor Bailey has made a list of the passes between the Isthmus and the Straits of Magellan and finds that there are 123 places where the mountains may be crossed at an elevation of from 2,756 to 16,047 feet. There is no pass, however, north of Santiago, Chile, lower than 11,000 feet, and when you get up into Bolivia the lowest pass is that of Huesos, 13,573 feet above the sea. For the last twelve years a scheme has been projected to build a line of railway between Santiago, Chile, and Buenos Ayres, and the track has already been laid on both sides of the mountains up to an elevation of about 9,600 feet, where it is proposed to construct a tunnel eleven miles long through the crest of the range under what is known as the "Uspallata" pass (12,700 feet), over which travelers are now carried in coaches between the termini of the railways. Several contractors who have undertaken the work have failed, and the scheme has been practically abandoned because of the discovery of several better passes in the southern part of the republic. One, in particular, at Antuco, about 200 miles south of Santiago, permits the mountains to be crossed at an elevation of 6,890 feet, and at the Tinguirica pass, which is about seventy-five miles south of Santiago, the elevation is only 10,500 feet. A company has already been organized for the construction of a railway over the Antuco pass, which offers to build a line from the town of Tome, across the bay from the city of Talcahano (you can see where it is if you will look at a map of Chile), through the departments of Coelemu, Itata, Chilan and Puchacai, to the town of Chosmalal in the Argentine territory, where it will meet a railway now under construction from Buenos Ayres and cross the continent 780 miles to the port of Bahia Blanca on the Atlantic ocean, and 1,180 miles to Buenos Ayres.

Extensive surveys have been made and revised by the department of public works, and it has been found that a road

360 miles long, crossing the mountains through a tunnel at an elevation of 4,980 feet, can be built for about \$45,000 a mile, or a total of about \$9,000,000, with a two and one-half percent grade. The cost of the Uspallata tunnel is estimated at \$11,000,000 alone, so that the advantage of economy is in favor of the southern route.

People now cross the Uspallata Pass on horseback and in coaches, and it is not an unpleasant journey during the summer months, although in winter, from April to October, it is exceedingly dangerous on account of the heavy snows that come on suddenly and fill up the roads until they are impassable. It is now a journey of from nine to twelve hours between the termini of the railways, by coach or a good saddle horse, and many people cross in thirty-six hours on foot. At intervals along the journey, low cabins of heavy stone and cement called "casuchas," that look like enormous bake ovens, have been erected as refuges for those who are overtaken by snow, and many lives have been saved by these rude but substantial shelters. The accommodations along the route are primitive and uncomfortable. The inns might be excused for their lack of comforts if they were only clean, but people who are accustomed to the trip arrange to start very early in the morning so as to arrive on the other side the same night and carry their provisions with them. If they are wise they take their bedding also.

The Cumbre, the dividing ridge between the Pacific watersheds of the Andes, and the highest point on the trail, is 12,795 feet above the sea, and there is always a gale blowing. Travelers are usually attacked with the disease known as "sirroche," in the northern countries of South America, but called "puna" in Chile, which is due to the rapid ascent from low to high altitudes and the rare atmosphere. The symptoms are bleeding at the nose and ears and often the lungs, and a terrible nausea, with a suffocating feeling in the head, but nobody ever dies from this cause unless the heart is very weak and the pressure of the blood upon the veins causes the bursting of a blood vessel. The only danger is a landslide which may bury you under a pile of earth and stone, or a snow-

storm which may drive you into a *casucha* and keep you there for a week in a cell not more than sixteen feet square without ventilation or any escape for the smoke from the fire which is absolutely necessary to cook your food and make your coffee. Those who are accustomed to the saddle will find the journey more comfortable on horseback because the roadway is not well kept and the jolting of the coach is tiresome.

It is said that Don Ambrosio O'Higgins, the father of the famous Barney O'Higgins, the liberator of Chile, invented and built the "*casuchas*" when he was inspector of highways before the independence of the republic. They were originally intended for the mail carriers. Before the days of steam, all mails from Europe used to be carried over the mountains by couriers from Buenos Ayres instead of taking a cruise of indefinite length, often three or four months, during the stormy season around the Horn. Even now there is a gain of from six to eight days in time by sending the mail that way instead of on a steamer through the Straits of Magellan. The couriers go in threes. One carries the post bag, another the provisions and the third the blankets and extra clothing so that they can assist or fulfill the office of either in case he should be killed. It formerly took seven or eight days for the mails to cross from Los Andes, the principal starting place on the Chile side, to Mendoza in the Argentine Republic. Now a mounted courier often covers the distance between the railway termini in seven or eight hours. There has been no serious accident to a mail carrier since August, 1881, when Victor Lagos, and Juan Guerra were overtaken by an avalanche. In the spring their bodies were found under an enormous snow-drift. In July, 1880, a courier named Vidal Toro froze to death near the Bridge of the Inca with the thermometer twenty-four degrees below zero.

The most picturesque part of the journey is the Puente del Inca, where there is a natural bridge similar to that in Virginia,—an arch of stratified shingle, cemented together by deposits and petrifications from the hot springs which bubble up out of the earth in the neighborhood. Their overflow

forms the river Cuevas, which has eaten its way through the shingle and falls in a cascade below. The bridge is sixty feet high, 120 feet wide, and varies from twenty to thirty feet in thickness. The bottom is covered with stalactites and in several grottos around the neighborhood are numerous springs of hot water containing sulphur, iron and other minerals.

There is no doubt that this bridge existed at the time of the Incas and was a station on the great highway which led from Cuzco north and south to the limits of the empire, and it was over this road that the tax gatherers passed annually to collect the tribute due their sovereign. The last collection was made in 1535 when Don Diego de Almagro, the partner of Pizarro in the subjugation of the Inca Empire, left Cuzco and passed south to conquer Chile. A little north of Jujuy he met the officers bearing the annual tribute to Cuzco and seized a portion of it. The remainder is supposed to have been buried near the Puerta del Inca.

When Almagro went to Chile he was accompanied by Paulo Tope, a brother of the Inca, and Villac Umu, the high priest of the nation. While he was away the natives, exasperated by the cruelty of the Spaniards, rose in rebellion and besieged Pizarro and his companions in Cuzco for seven months. Almagro followed the great highway of the Incas southward, crossed the bridge, and trying to go westward became entangled in the mountains, the dark forests and long stretches of barren plains, without shelter from the blasts that sweep down from the snows of the Andes. The cold was so intense that many of the soldiers were frozen, others went blind from a disease of the eyes called "surumpe," which is caused by constant exposure to the glare of the sun upon the snow. The Indian allies, who came from a much warmer climate, were unable to endure the severity of the Chilean winter, and many died from cold and when hunger overtook them, the miserable survivors ate the dead bodies of their countrymen. It was one of the most melancholy and disastrous marches on record, but Almagro finally passed over into the beautiful valley in which Coquimbo now stands, and remained in camp there in the midst of one of the richest

garden spots on earth until his troops could recover from their unparalleled exposure and fatigue. Then he crossed the desert of Atacama to Arequipa, a most hazardous undertaking. No captain of this generation would dare attempt it, and it is a wonder that Almagro and his men survived.

It is probable that the Incas knew of the curative properties of the springs around El Puente del Inca, because the first Spaniards to arrive mention the discovery of enormous tambos or hotels which had been erected there for the accommodation of visitors, and one especial "tambillo" intended for the king and his court, which is said to have been erected during the year that William the Conqueror invaded England.

There are many legends concerning this picturesque locality. One of the stories is that an arriero, or mule driver, going over the bridge one day, lost one of his animals and followed its trail into the mountains. Three or four miles from the bridge he was surprised to see a man seated with his back against a rock and a gun beside him as if he were enjoying the scenery. As he made, no answer when addressed, the arriero laid his hand on his head which immediately dropped off and rolled over on the ground. The man had been dead forty years and the body was partially petrified. From papers found upon his person it appeared that he was an officer of the Spanish Army and after the defeat at Maipo had attempted to make his escape across the mountains to Mendoza.

The Inca's bridge was at one time the headquarters of a famous Italian bandit named Farina who robbed the silver trains that passed over the mountains. After he had succeeded in stopping the traffic he retired from the business and opened a hotel in Valparaiso. Upon his identity being discovered he escaped to Buenos Ayres, where he kept a gambling house for many years until his death.

In 1879 a young merchant of Valparaiso, named Rafael Tapia created a sensation that will never be forgotten. Being oppressed by financial complications, he informed his wife that he must visit Buenos Ayres on business, and after a tender farewell of his family he started upon his journey. Having

reached the Inca's bridge he drew his revolver, led his horse to the edge of the precipice, shot the animal in the head and watched its carcass roll down the rocky slope. Then he unpacked his traveling bag, arrayed himself in fresh linen, a white tie, white gloves and full evening suit, drank a bottle of champagne that he carried in his bag, and then shot himself through the heart. His body was found a few days later resting comfortably against a great rock, with the empty bottle on one side and the empty revolver on the other, while in his pockets was a formal adios to all his friends and a request that they would remember that he died as he had lived, like a gentleman. He was buried by the roadside and a rude wooden cross now marks the spot.

The scenery on the journey across the mountains is both picturesque and imposing and furnishes splendid views of Aconcagua, the highest mountain in America, which measures 23,200 feet, and the volcano Tupungato, which is 22,015 feet in height.

The proposed tunnel which was to carry the railway under this pass is said to have involved the most complicated engineering problems ever attempted. The railway track was brought up on the Argentine side by a series of "rack sections," as far as the mouth of the first tunnel, called El Navaro, which was to be 5,325 feet long. The Quedebra Blanca was then to be crossed by a steel viaduct, which would carry the track to the second tunnel, known as Las Cuevas, which was 15,195 feet long and showed the highest elevation on the line. On the Chile side the mountains fall so rapidly that it was necessary to build a series of helicoidal tunnels, like those on the Saint Gothard line in Switzerland, describing a complete corkscrew to overcome the grade in a series of tunnels 27,840 feet long and dropping 2,762 feet in that distance.

People in Chile told me that the cunning and cruel condor, which used to carry off lambs and kids and even children and sweep down on the unwary traveler in the mountains, is almost exterminated. This tiger of birds is now seldom seen except in the southern ranges of the Andes, where the population is sparse. There it still preys upon the flocks and hen-

roosts and is dreaded by farmers and frontiersmen. Some years ago the congress of Chile passed an act declaring the national bird a public nuisance and offering a bounty of \$5 for every condor killed. This reduced the number rapidly at a cost of several thousand dollars to the public treasury, and they are now as scarce as the baldheaded eagle in the United States. The majority of people of Chile have never seen anything but the miserable and repulsive specimens that are kept in the zoological gardens. Condors do not thrive in captivity. The rare atmosphere and the low temperature of the mountain-tops are necessary to their existence.

Passing over the Andes on muleback or in a railway train, black specks in the sky are often pointed out to unsophisticated travelers as condors "soaring in the blue empyrean," as we read in the old geographies, and it is just as well for tenderfeet to believe what is told them and enjoy the satisfaction of having seen one. You occasionally hear prospectors tell of condors haunting the mule trails in the interior, waiting for some poor exhausted beast to lie down and die. They are said to smell carrion farther than it can be seen. No doubt a mysterious intuition informs them when animals are about to peg out, but scientists insist that the atmospheric vibrations make it impossible for odor to be conveyed a long distance. It is a fact, however, upon which everybody agrees, that a condor will invariably arrive at the death bed of a mule or a sheep before the victim breathes its last, but it will always remain out of range as long as human beings are seen in the neighborhood. Although the old song says,

"Next comes the condor, awful bird,
On the mountains' highest tops,
Has been known to eat up boys and girls,
And then to lick its chops,"

condors rarely attack children or any other human beings. Hunters who were working for the bounty used to kill an old mule or a horse and then lie in ambush near the carcass. To shoot it on the wing is entirely out of the question, for it flies at altitudes such as no other bird attains. The condor hatches its young among snow-covered crags, often at an altitude of

20,000 feet, and can endure a range of temperature in which human existence is impossible. It is equally at home upon the snowy peaks and upon the burning sands of the Chilean deserts. With a sweep of wing from nine to twelve feet in extent, its flight is so swift that it can sail out of sight in a very few moments. Observers have timed the flight of a condor, and claim that it is superior to that of an eagle.

Poisoning condors is said to be impossible. A stomach that will relish the carrion upon which it usually feeds is said to be proof against poison.

The government of Chile has leased the Island of Juan Fernandez, sacred to the memory of Robinson Crusoe, to a firm of Germans, who have erected a canning factory and are putting up fish, lobster and crabs for South American market. They also have herds of cattle and goats on the ranges, and ship a good deal of fresh beef to Valparaiso. The goats are raised for their skins and are descended from the very animals that furnished food for Robinson Crusoe.

The island is situated about 400 miles west of Valparaiso and the leasees send a sailing ship back and forth with regularity. There is quite a town at Cumberland Bay, composed of their employees. Occasionally parties of sportsmen from Chile go over to Juan Fernandez for shooting, and it is a favorite resort for naval vessels as it offers a good opportunity to give the men liberty without exposing them to the temptations of city life. The island is about twenty-three miles long and ten miles wide, at the broadest part, and it is covered with beautiful hills and lovely valleys, the highest peaks reaching an elevation of 3,000 feet. The landscape and many of its topographical features are correctly described in the story, but Defoe located it in the Caribbean Sea near Trinidad. The story of Robinson Crusoe follows closely the experience of Alexander Selkirk, as related by him to Daniel Defoe after his return to England.

Selkirk was a son of a shoemaker and tanner, a man of means at Largo, Fifeshire, Scotland, and was born in 1676. Being a wayward boy he ran away from home and took to the sea in early life. In 1701 he was sailing master, or chief

mate, of the Cinque Ports, one of a fleet of privateers sent out from England to the South Seas under Captain Damphier. After the death of Captain Charles Pickering, who was friendly to Selkirk, Lieutenant Thomas Straddling was appointed to command the vessel, and while cruising along the shores of Mexico, had a quarrel with his first mate which grew fiercer and fiercer until the vessel reached Juan Fernandez, where Selkirk was marooned for mutiny. He was sent ashore with his sea chest and all of his effects, and furnished with tools, arms and ammunition so that he might sustain himself. The shores abounded with fish and the mountains with goats, so that there was no danger of starvation, and Selkirk relates in his journal that as time wore on he became reconciled to his situation and was "Monarch of all he Surveyed." The faithful Friday was a Mosquito Indian from Nicaragua who had been abandoned at Juan Fernandez by the captain of his ship who landed there for fresh water and fresh meat some weeks before the arrival of the Cinque Ports.

In 1708 another privateering expedition was sent out from England, composed of two vessels called the "Duke" and the "Duchess," under the command of the same Captain Damphier, and they arrived at Cumberland Bay on the 31st of January, 1709. Selkirk had been forgotten and the officers and sailors were astonished to find him still alive. Several men in the crew had sailed with the Cinque Ports and remembered distinctly the circumstances under which he was marooned. Captain Dover of the privateer "Duke," invited Selkirk to come aboard his ship and offered to fit him out with clothing. On the recommendation of Captain Damphier he was afterward commissioned as mate of that vessel. Thus, after a residence of four years and four months upon the island, Selkirk was rescued by the same man who deserted him there. His remarkable experience seemed to have softened his temper and subdued his spirit for he made a good record and maintained good discipline during the rest of the cruise and assisted in the capture of several prizes-of-war, which brought the officers and crew of the "Duke" prize

money to the amount of £170,000, of which Selkirk received a large share, being third in rank on the vessel.

At the end of the cruise he returned, a rich man, to his native Largo and there intended to spend the remainder of his life. He built a fine house and a boat, and spent his time sailing, fishing and in solitude upon which cupid intruded. Selkirk fell in love and eloped with a girl by the name of Sophie Bruce, but the marriage did not turn out happily and in 1817 he entered the regular navy and died a lieutenant on board the frigate "Weymouth," in 1723. Several years later a widow named Frances Candis came to Largo to claim his property. She produced documents to prove that she had married him in 1720. Selkirk left no children but his nephews and nieces were numerous and their descendants form a large part of the population at Largo, in Fifeshire, where his sea chest, a cocoanut-shell cup which he used at Juan Fernandez and other relics of his exile are still exhibited to travelers.

During his stay in London, Selkirk was a frequenter of the coffee houses in Fleet street and it was there that Daniel Defoe heard his story.

XXVII

SOUTHERN CHILE AND TIERRA DEL FUEGO

The agricultural part of Chile, which lies south of Valparaiso, is being rapidly developed, and the cities of Talcahuano, the principal sea port and Concepcion, the commercial metropolis of that section, are full of enterprises and worthy of the pride of their inhabitants. These and other cities of southern Chile are quite as much up-to-date as the corresponding agricultural centers in the United States and are growing as rapidly. There is a considerable impulse to immigration and an excellent sort of colonists is coming over from Germany, Norway, Sweden and other countries in the north of Europe. Much business is done in wool, corn, wheat and flour. The commercial enterprises are largely German. Wheat culture is increasing rapidly as the agricultural colonies move southward into the colder regions. Modern roller flour mills are being erected, and Chile flour is now sold in competition with that of California all the way up the coast as far as Panama. Five lines of European steamers touch regularly at Talcahuano bringing general cargoes and carrying back the produce of the country.

Scientific agriculture is making greater progress in Chile perhaps than in any other American country perhaps except the United States especially in rural economy, arbor-culture viti-culture. The breeding of cattle and horses, has long been one of the most important and profitable industries, and is being encouraged by private associations as well as by the government. In fact all branches of education receive national and private encouragement in Chile, and the school system, which is supported from the tax on nitrate is no doubt the best of any of the South American Republics. The late President Balmaceda made a hobby of public schools and

particularly primary education, and secured the passage of a compulsory education law, which was enforced with considerable vigor while he was in power. The University of Santiago, the head of the educational system of the country, has from twelve to fifteen hundred students and the professional schools are well kept up and well attended. There is no country in the world where the upper classes are so thoroughly educated, and few of the peons are illiterate. In this respect Chile is far in advance of other South American Republics.

Forty miles south of Talcahuano and connected with that city by railway are the mining towns of Lota and Coronel, where Don Matias Cousino opened the first coal mines in South America in 1855. The coal is inferior to our ordinary bituminous,—is half way between lignite and true coal and belongs to the lower tertiary formation. In the Lota districts the seams run under the sea and the shafts are immediately upon the bluff that lines the shore so that the cars that enter the pits can be hauled to the end of the mole and dumped immediately into the bunkers of the steamers. The Lota coal mines have an annual output of about 400,000 tons, and are operated by electricity, the power being obtained from a water fall about six miles distant. The coal is hauled out from the shaft by an endless chain with an ingenious arrangement designed by a Belgian engineer. The miners are mostly natives and are well treated. The towns and everything around Lota and Coronel including several large smelters belong to the Cousino family or are controlled by them.

Some of the finest scenery in the world is to be found in Smythe's Channel, the strait or sound which separates the archipelago of southern Chile from the main land; but the passage is dangerous and the British insurance companies will not permit steamers to go that way owing to the lack of lighthouses and proper charts. The German steamers, however, usually take the risk much to the advantage of their passengers, who not only are able to enjoy a voyage quite as picturesque as that through the famous inland Sea of Japan, but escape the terrors that attend the passage down the west

coast below Talcahuano where the surf is always high and storms are frequent.

A lighthouse has recently been established by the government of Chile at Cape Pillar, the western entrance to the Straits of Magellan, which is a narrow and dangerous passage, and seldom could be entered at night until this improvement was made. Some years ago the steamer on which I was making a cruise reached Cape Pillar about three o'clock in the morning and was compelled to slow down until it was light enough to see the entrance. In the meantime a terrible gale came on which drove us 350 miles out of our course. It was four days before we got back to Cape Pillar again. Cape Pillar is a rugged barren rock, 310 feet high, but on the other side the peaks run up to 4,350 feet.

The passage through the straits is usually attended by rain, mist and snow. An Irish friend, who formerly lived there, while describing the climate, once remarked that every rain was a snowstorm. The latitude of the Straits of Magellan is about 53 south, nearly that of Sitka or Cape Farewell, the southernmost point of Greenland, and Puente Arenas the only town, has a climate much like the Klondike. There is little vegetation except along the water's edge and the snow line on the mountains comes down nearly to the water, while dazzling glaciers of bluish green ice are imbedded between craggy and barren hills and often rise to the crests of the mountains. These masses of ice are as imperishable as the glaciers of Greenland, and add a feature to the scenery that is not found elsewhere within the ordinary course of steamers. Our vessel tied up to a glacier one night in the middle of the Straits until the crew had chopped enough ice to fill the refrigerators and last until it arrived in England. It is a region of marvelous sunsets as well as rugged scenery, and if one were always sure of getting clear weather, I should recommend the voyage to everybody.

The Straits are ordinarily about as wide as the Hudson River although the height of the mountains is much greater. Mount Warden, the first peak to be seen after entering at Cape Pillar is 4,360 feet high. Mount Victoria is 2,900 feet

and there are many others from three to four thousand feet, with Mount Darwin (6,600) and Mount Sarmiento (6,800) crowning the group.

Mount Sarmiento stands in what is known as "Cockburn Channel," not far from the Pacific, and on clear days its summit can be distinguished from the decks of passing ships. The beauty of this peak is much enhanced by numerous blue-tinted glaciers, which descend from the snowy cap to the sea, and look, as Darwin, the naturalist, who once saw it, said, "like a hundred frozen Niagaras."

There are other mountains quite as beautiful but they sit in an atmosphere which is seldom as clear as that which surrounds Sarmiento and cannot often be seen by voyagers. That chain of mighty granite vertebræ, which extends from Alaska to Cape Horn, and forms the spinal column of the hemisphere, ends in grandeur at the edge of the antarctic circle. The mountains hug the Pacific coast, and below what was once the southern boundary of Chile, they seem to have once been shattered by a convulsion, in which mighty masses of rocks were thrown off into the ocean to form the numberless islands that compose the Patagonian Archipelago. The same upheaval broke the mountain chain and left Tierra del Fuego separated from the continent by narrow channels of water with a depth to which the plummer has never reached, forming a safe and protected passage for navigators, for whom the incessant tempests of Cape Horn possess the greatest dread.

The only town in the Straits of Magellan is Puente Arenas, a free port which was formerly a penal colony of Chile, and is now a very important market and supply point for the miners of Tierra del Fuego, the ranchmen of Patagonia and for passing steamers. It has a population of about 12,000 people representing all the tribes and races of mankind and it is not safe to ask a man where he came from or what his name was before his arrival. The country back of Puente Arenas is pretty well taken up with sheep ranches and a large amount of wool is shipped to Europe from that place. Although the climate is severe, the sheep seem to thrive and although uncultivated, the wool is of excellent quality. A large trade is done

in furs and skins and the prettiest things to be bought at Puente Arenas are ostrich robes made of the breasts of young birds. Seals are plenty along the rocks of the coast, but their fur is not so good as that of the northern zones. In Patagonia, ostriches are not bred as at the Cape of Good Hope, but run wild and are gradually being exterminated. The Indians chase them on horseback and catch them with a bolas,—two heavy balls upon the end of a rope, woven of leather. Grasping one ball in the hand they gallop after the ostrich, and whirling the other ball around their head like a coil of lasso, they let go when near enough to the bird, and the two balls still revolving in the air, if skillfully directed, will wind around the long legs of the ostrich and send him turning somersaults upon the sand. The Indians leap from their saddles, and if they are out of meat, cut the throat of the bird and carry the carcass to camp; but if they have no need of food, they pull the long plumes from his tail and wings and let him go again to gather fresh plumage for the next season.

The bolas are handled with great dexterity, and well trained Indians are able to bring down an ostrich at a range of two or three hundred yards. But it is not often necessary to fire at that distance. Horses accustomed to the chase can overtake a bird on an unobstructed plain, but the birds have the advantage of being artful dodgers, and carrying so much less weight, can turn and reverse quite suddenly. The usual mode of hunting, is for a dozen or so of mounted Indians to surround a herd and charge upon them suddenly. In this way several are usually brought down before they scatter, and those that get away are pursued. As they dodge from one hunter they usually run across the range of another, and the first they know they are tripped by the entangling bolas. People passing through the Straits often stop over a steamer at Puente Arenas and enjoy an ostrich chase. They can secure trained horses and guides at moderate prices; but one who has never thrown the bolas will be amazed to find how difficult it is to do a trick that looks so easy.

Some years ago, a young English lord, who went down to exterminate the ostrich family, came very near being lynched

for manslaughter, as the first bolas he threw took one of the half breed guides under the ear and laid him out as cold as a wedge. His lordship made suitable provision for the family of his victim, and the deceased man's partner immediately took up with the bereaved widow without the formality of a wedding ceremony; the bride and groom omitted the usual period of mourning and appeared to be much gratified at the results of his lordship's visit. Of course the neighbors were scandalized, but the marriage was useful in diverting public attention from the accident, and the reckless scion of the nobility slipped away to Valparaiso without explaining matters to the courts.

In the harbor of Puente Arenas lies an old iron hulk, now used as a coalyard from which to supply passing vessels, which has a remarkable history. About three years ago a steamer passing through the straits saw a vessel drifting around with the currents, and, not receiving any reply to the signals displayed, sent off a boat's crew to ascertain the trouble. It was discovered that she was water logged and rudderless and without a soul on board except a cat. The discoverers towed her into Puente Arenas and anchored her where she now lies. This ocean waif turned out to be a collier from Scotland, bound for the west coast of South America; and it is supposed that she was abandoned in a storm by her officers and crew off the Horn, and that they all perished, for none of them was ever heard from. The vessel had drifted about until she caught the current which pours through the Straits at the rate of six knots an hour, and was by it carried into smooth water, where she had been drifting like a log no one can tell how long. According to calculations based upon the date of her departure from Cardiff and her ordinary rate of speed, at least six or eight weeks must have elapsed between the time of her abandonment and that of her discovery. The cargo of coal was found to be partially under water, but in good condition, and her captors made a good thing of it.

Tierra del Fuego promises to be another Klondike, although it has been only partially explored, and the climate is even

more severe than that of Alaska. Coal, copper, silver, and other minerals have been found in great abundance but the gold deposits are so easily reached and worked that the prospectors do not pay much attention to the other metals. Gold was first discovered by some shipwrecked seamen in 1876 while they were digging for water. Strange as it may seem, one can often find fresh water by sinking a pit only a little distance from the sea. The salt seems to be extracted from the sea water as it filters through the sand, and those sailors knew the trick. When they had digged a hole, about three feet deep, they reached a strata of black sand that sparkled with particles of gold and traced it down under the beach out into the ocean. When the party were rescued and carried their story to Puente Arenas, it created great excitement, and a village of about 120 miners of all nations soon sprang up near the spot. It was found that this layer of black sand extended some distance back from the beach and under the waters where it could only be reached at low tide or by sinking a cofferdam. The washings paid ordinary miners with primitive appliances from fifteen to twenty dollars a day, but after a time, the yield began to fall off and most of the miners deserted the place to look for other deposits. Some of them starved to death; some were frozen; others were killed by the Indians, and a few returned to Puente Arenas with distressing stories of their experience, which had the effect of subduing the gold excitement.

In 1884, the steamer Arctic went ashore near Cape Virgin at the eastern end of the archipelago and the crew and passengers, who managed to save themselves and sufficient provisions to sustain them for some time, discovered similar deposits near the beach in banks composed of layers of clay, pebbles, sand and shells. When they reached civilization, they exhibited a large quantity of gold and their adventures having been reported to the Argentine Government, a commission of mineralogists was sent down to explore. Upon their reports a company was organized which has since been working with fair profits at a place called El Paramo (the Spanish term for desert). With that camp as a center, prospectors have

explored the bleak country and have found other large deposits of gold bearing black magnetic sand, similar to those described. Mining camps have been established at Lenox Island, Slogget's Bay and at several other places, and considerable gold is brought into Puente Arenas which is the market and outfitting point, and the only source of supplies. It is believed that the gold was washed down from the mountains by the streams, but the mother veins have never been discovered, because of difficulties that are too great to be overcome. The mountains and hills are covered with heavy snow the greater part of the year; the cold is intense; storms are frequent and the Indians are hostile and savage. There is probably no mining country on earth where such serious difficulties are encountered.

The Firelanders, as the inhabitants of the Tierra del Fuego are familiarly known, are among the lowest and most degraded of human beings, resembling the Digger Indians in their mental and moral condition. Although living in a perpetual winter, they wear little clothing, and live entirely upon fish and the flesh of sea animals which they catch with rude implements. They divide their time between canoes, or dugouts made of the trunks of trees, in which they paddle through the Straits, and rude huts sheltered from the fierce winds by the rocks in the mountains. When night comes they go ashore and build fires to temper the frigid atmosphere, and, seeing them blazing over the archipelago, the early navigators called it Tierra del Fuego, the land of fire. Bishop Stirling of the Church of England, an energetic and patient man, who has charge of the diocese of South America, and whose genial face is familiar throughout Brazil, and the Argentine Republic, as well as the countries of the west coast, has been working for thirty years among these depraved creatures with no great success. At least one of his missionary parties was eaten by the subjects of their prayers, and another party came to a tragic end by starvation. Bishop Stirling himself has had narrow escapes from the appetites and passions of his parishioners, but still believes the Fuegians are

within the reach of saving grace and is patiently trying to civilize them.

The Araucanian Indians, the native race of southern Chile, have never been subdued by the whites and are much superior in every respect to the Fuegians. The government has attempted to absorb and assimilate them in a manner that has been remarkably successful. The land they occupy is divided among them in severalty, their hereditary chiefs have been made their magistrates and they are now almost entirely engaged in agricultural and pastoral pursuits. They retain their language and many of their aboriginal customs and have been greatly demoralized by the unrestricted sale of liquor, but are improving continually and advancing towards civilization more rapidly than any other of the native races in South America.

Patagonia is pretty well settled and civilized. The aborigines are either extinct or have been amalgamated with the remainder of the population. The greater part of the men are in the army and the women have been distributed through the country as servants. The Argentine government has given special attention to the development of that part of its territory with remarkable success.

THE END

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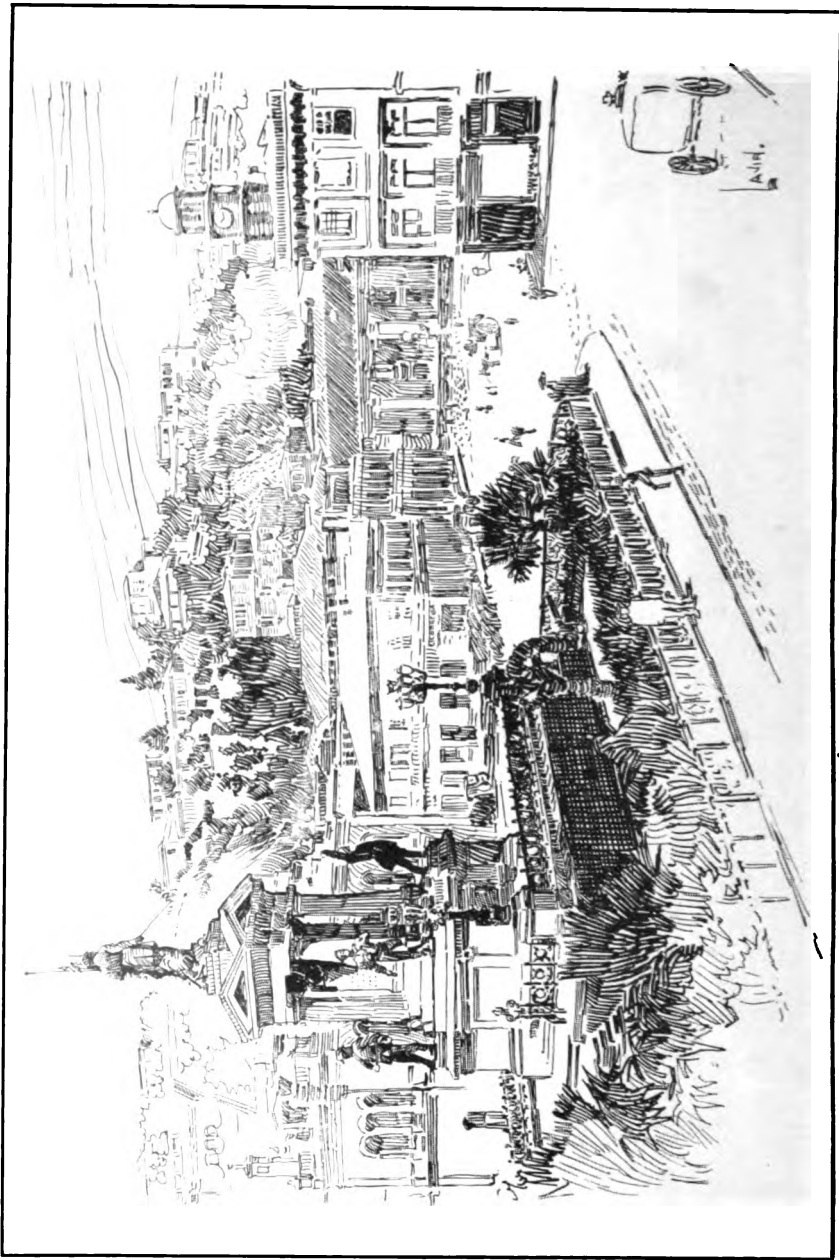
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